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ABSTRACT

The document discusses the curricular implications of global studies for teachers of all subjects and grade levels, emphasizing that the global approach can facilitate the integration of knowledge. The purpose is to help educators become aware of the implications that global studies have for their special interests. It is presented in 12 chapters. Chapter I describes a model of an interdisciplinary global studies course. Chapter II presents an overview of global education in the United States. Chapter III offers ways to integrate science and other curriculum areas to present a realistic world picture. Chapter IV discusses the implications for early childhood education with special reference to the Year of the Child. Chapter V delineates four goals which multicultural education and global studies have in common. Chapter VI clarifies the problem of applying arts to global studies. Chapter VII recommends action in the area of foreign languages. Chapter VIII uses a case-history approach to the curricular implications of global education in regard to school administration, structure, and climate. Chapters IX and X present key concepts from the fields of health and nutrition and social studies that provide the critical issues for global studies. The concluding chapters suggest a variety of teaching strategies in the areas of mathematics and environmental concerns. (CK)

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PREFACE

Our children live within a complex and interdependent world. Political, economic, and environmental issues are and will continue to be greatly influenced by people in distant lands. Modern transportation, communication and international organizational structures have transformed our world; yet our schools seldom recognize this transformation and few curricula allow or encourage a global perspective. It will not suffice to mandate a course or two on the secondary level in world history (frequently Western-oriented ancient history) or world cultures, or an introductory course to a second language. The exposure of students to one or two fragmented courses in the social studies will not develop the skills, knowledge and attitudes necessary for coping with domestic and world issues and opportunities that will be faced by citizens during the twenty-first century. Teachers of all subjects and all grade levels must recognize the curricular implications for them and endeavor to expand opportunities for their students to acquire a global perspective.

Curriculum Dimensions of Global Education has been commissioned by the Pennsylvania Department of Education and is addressed to professionals from a variety of disciplines. Historically, global studies has been of interest to teachers of social studies and second language programs; yet analysis of any world news journal reveals that such subject areas as the sciences, fine arts, communications, business, nutrition and environment are deeply involved in global affairs. This document is designed to stimulate in educators from these various areas an awareness of the

implications that global studies have for their special interests. A chapter addressed to administrators is also included because any change, but particularly one that impinges upon the total curriculum, will have to have their support.

Another curriculum opportunity that the global approach can facilitate is the integration of knowledge. It cannot be denied that the basic skills are critical to education, but they are not an end in themselves. They merely provide the tools to cope with a complex world. Likewise, the subject area disciplines have been of great value in clarifying ideas and providing specific insights into examining the world. However, if education is to encourage the development of well-rounded people who can not only survive but also enjoy and contribute to their existence, schools must help students to integrate the ideas from varied disciplines and use them in solving problems and setting goals.

"An Integrated Approach to Global Education," written by Robert Schell of the Department of Education, serves as a descriptive model for a number of programs in basic education in the state. It also served as one of the common backgroumd readings for all authors of this publication; thus, it is reproduced as the first paper in the document.

Following the Schell paper is an overview of global education in the national scene presented by James M. Becker, Director of the Mid-America Program for Global Perspectives, Indiana University.

Each of the other authors included in Curriculum Dimensions of Global Education represents a specific field of interest. Although

each had a basic set of background materials in global studies, the individualistic treatment of the subject by each author provides a varied and interesting panorama. Some of the authors who have been involved in teacher education explain various methods that teachers use to motivate their students in activities that can lead to insights within the global context. Swetz and Zolomij develop a variety of teacher activities along this line. Others such as Rawson and Searles present key concepts from the fields of nutrition and the social studies that provide the critical issues for global studies. Hoffa establishes a dialectic and clarifies the problem of applying the arts to the general area of global studies with candid enthusiasm. Luoma, though writing more on the administrative actions and philosphies of a transdisciplinary nature than directly on global studies, provides the reader with valuable information on management policies requisite for achieving success in this area. One of the basic contentions of "An Integrated Approach to Global Education" is that the best model is a transdisciplinary one, and this paper provides excellent insight into this administrative procedure.

Since this publication addresses the wider dimensions of global studies, a key issue is the need for teachers to change their role and to consider varied aspects of global studies as well as interaction with colleagues from different disciplines. Bruce discusses ways to build bridges between science and other curriculum areas in order to present to students a realistic world picture. Konick elaborates on the discrepancy between the need for teaching other languages in an interdependent

world and the stark reality of declining language classes. He suggests changes in teacher roles if language teachers are to play a part in this movement. Cartwright establishes the global contacts from which early childhood education arose and then goes on to draw implications for the area of education with special reference to the Year of the Child. Cortes explores the natural link that exists between global studies and multicultural education through a discussion of four goals which the two educational perspectives have in common.

-- *Robert L. Schell*

Harrisburg, Pennsylvania

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Chapter 1

AN INTEGRATED APPROACH TO GLOBAL EDUCATION

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Since 1961 the study of World Cultures has been mandated for secondary school students in the State of Pennsylvania. Today, with growing emphasis on the basic elements of our educational system, it is necessary to reflect upon the needs for continued efforts in this direction and to suggest new approaches which will contribute to the competencies of our youth as members of a global society. The now meaningful concept of Spaceship Earth had not yet become a reality when World Cultures was mandated. But the world has changed drastically in the intervening years and the attitudes of our youth have shifted.

It is interesting to note that a National Citizenship Conference sponsored by the Council of State School Officers and the U.S. Office of Education in Kansas City, in September, 1976, included Global Perspectives as a major component of citizen education. But the realities of global education are not encouraging. As Stephen Bailey (1975) notes:

> American schools . . . are caught up in curricular and degree requirements that do not reflect the urgencies of modern international coping. Furthermore, a heightened vocationalism in a mass educational market may well be exacerbating the parochialism of the American educational system.
>
> Unless something is done to compensate for these educational anachronisms, the United States will lack the expert human resources needed to steer American public and private enterprises through the dangerous and uncharted international waters that lie ahead. Equally serious is that this nation will lack the

> widespread popular understanding needed for the political acceptance of difficult trade-offs urged by informed leadership or emerging as the neccessary logic of our living in a perpetual state of international interdependency. (p. 4)

The need for global understanding is a necessary element of survival, but are our present World Cultures courses achieving this end? A review of the status of such courses in Pennsylvania and of international education courses in the nation indicates that most of these studies have moved from chronological or historical approaches to a spatial one. Area studies seem to be the major method of studying other people and usually these studies are interdisciplinary in nature, though history of the people is usually given precedence. While history is given more emphasis in the study of European cultures, the contemporary is often stressed in Asian and African areas. There have been many positive aspects of this approach but there are a number of results which must be scrutinized.

Despite many efforts to develop post-hole learning experiences, a problem remains: Either the coverage of regions is superficial, or, if study of areas is eliminated, many of the immediate concerns of the world are by-passed. Students frequently question the value of studying about people from long ago and far away. Finally, there is a tendency to deal with the unique cultural components of individualized areas without getting at the interdependent nature of the world. International economic, ecological and political problems are not studied. The cooperative interactions of people on a nongovernmental as well as govern-

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Bailey, Stephen K. International education: An agenda for interdependence. International Education and Cultural Change, Fall, 1975, p. 4.

mental basis are overlooked--yet these are the key concerns of survival in an interdependent world. Obviously, a new attempt at promoting global understanding is required. Global education, as described below, represents one such effort.

Global education differs from World Cultures in several ways. First, it goes beyond the social studies and focuses upon an individual seeking to find understanding of the world in which survival and happiness are sought. To understand one's self in this context, it is necessary to draw upon the ideas of many subjects.

Secondly, global studies is based upon the use of concepts. This helps motivate students by having them explore some of the basic similarities shared by all people. They then expand their ideas across space to other cultures and back in time to understand the roots of the uniqueness of peoples. Many students resist studying about strange people in far away places. They often see little connection between these studies and their own lives. Consideration of the universals of human culture and the changing way these universals are addressed through time and space illustrates alternatives while maintaining the common thread of the unity of all people.

A third difference is the developmental sequence which directs the student to a consideration of the present and future as well as the past. Since World War II, there have been major technological and political changes that have drawn people together into an interdependent and interlocking world. The formation of the United Nations and smaller regional

organizations have changed economic, political, and cultural life. The recognition of limited resources and of the dangers of environmental pollution in our developing world demand that future citizens develop basic global understandings if the human race is to survive. The threat of nuclear, biological, and chemical warfare that could end all life on earth, and the consequent limitations of military power to settle disagreements indicates a need for a citizenry aware of the dangers, yet sophisticated enough to develop skills for resolving conflicts in ways less destructive and violent. The establishment of decisions based upon moral commitments to such ideals as human rights provides an answer to Machiavellian pragmatism. Our nation was founded on some basic principles that the world has come to acknowledge through the Universal Declaration of Human Rights. These principles are basic to our survival- and our pursuit of happiness. A return to the basics, therefore, must go beyond establishing communication skills. It must deal with the issues addressed in this paper - issues of problem solving, personal interaction, and understandings that enable students to relate in a personal way to other humans from other lands and times.

The Integrated Approach

These differences require that the curriculum be structured differently for global studies than for World Cultures. One possible approach to global education is described below. This approach, rather than being organized around chronology or spatial relationships, focuses on major

concepts from which specific competencies may be derived. The purpose of this approach is to achieve the following objectives of global education:

1. Develop an integrated plan of education that increases the ability of students to use the tools of varied disciplines to understand their world and cope with the major issues confronting humans.

2. Develop skills in perceiving, in organizing knowledge, in interpersonal interaction, and in problem solving.

3. Develop an awareness of the common goals, hopes, and creative expressions of people from a variety of different lands and cultures through an integrated study of the world.

4. Develop a self-understanding (microcosm) through a deeper understanding of others (macrocosm).

5. Develop methods for individualizing instruction for students while maintaining a common core of developmental growth.

6. Develop a systematic way to consider a vast area of knowledge so that lifelong learning may be encouraged in a rational manner.

This approach offers three primary advantages:

1. Students are motivated by developing concepts which are a part of their understanding, and by expanding these interests across space and through historical time to clarify perspectives.

2. Although the concepts are presented sequentially with regard for their historical development, they proceed to the areas of current concern. They stimulate understanding of the critical problems of the human condition while exploring the positive actions that humans have taken while coping with their world and improving life quality on a broad scale.

3. This approach presents a model for integrating the tools of a variety of intellectual disciplines in gaining perspective on the human condition.

Concept Cluster A: Heritage and Change

The major concepts on which this approach is focused are structured in three clusters or circles. The first circle (see Figure 1) is concerned with the development of an understanding of the societal forces or cultural universals that affect each individual. These universals affect the students as they also have affected other people across time and space. They have the advantage of appealing to the students' own frames of reference which are then expanded to the study of others. Thus, a teacher can move the student from the consideration of "I" to an understanding of "we."

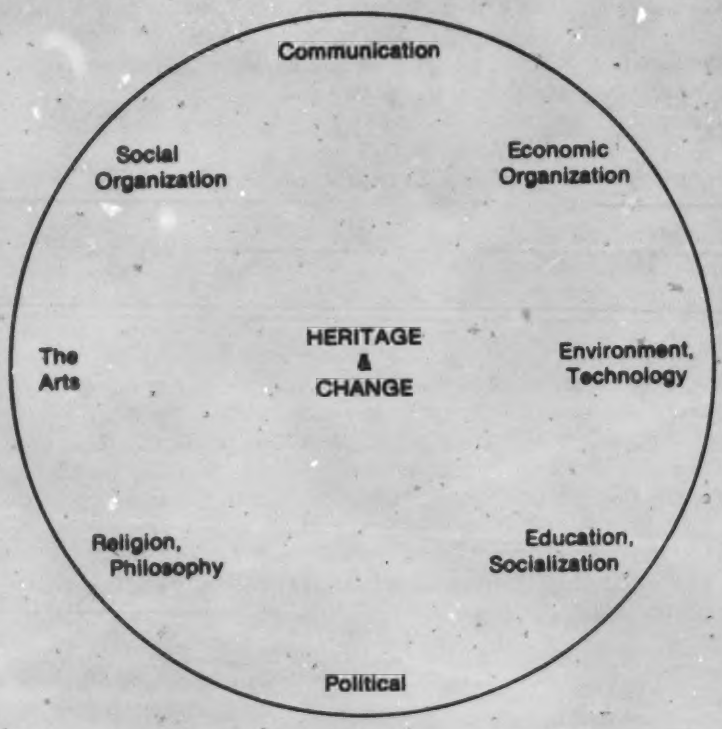

Figure 1. Circle A -- Cultural universals

These universals would apply to any culture area in any time span, and provide an understanding of the holistic nature of human society. Although the circle includes many concepts, they frequently intertwine and an understanding of any culture is dependent upon the totality of all. The central concepts of heritage and change provide the vehicle for synthesizing the universals.

Heritage and Change is an integrating concept that influences all other cultural universals. All cultures possess a heritage that determines the manner in which individuals within that culture meet the needs expressed in the universals. At the same time, change is irresistably influencing all of these universals. This is less true in traditional societies, but there would be no history and no progress if change were not ever-present. Radical change may be referred to as revolution, while gradual change is usually referred to as evolution.

Social Organization is the way humans organize their societies, especially around age, sex and economic roles within families, social classes, and institutions. Social institutions tend to pass on the heritage but changes in culture often disrupt social organizations, causing social problems.

Communication connotes written, oral, and other symbolic modes of interaction that are the basis of human activity, especially in the abstract. A study of communication provides insight into cultural values and reveals the strength of tradition as well as providing signs of change.

The Arts illustrate how civilized social units have typically relied

upon and rewarded the artist for representation of the humane achievements of the group; for recording, informing and celebrating exploits, conquests and beliefs; for maintaining continuity of identity, purpose and growth; and for transmitting this information to succeeding generations.

Religion and Philosophy exemplify the ideals, goals, and sometimes the parameters of a cultural group. The intent is not to delve into complex theology, but to bring about an awareness of the basic aspirations and traditions of the culture of a people. Philosophy may be supportive of religion or it may be separate or even in opposition, yet it is included here because both areas are concerned with the complex questions of life.

Environment and Technology refer to the interaction between people and their physical surroundings. The first time humans altered their environment, technology was born. The nature of inventions emphasizes change, yet the element of continuity is always present. Human adaptation has been a theme of history, but the often subtle changes caused by advances in technology are only now becoming evident as a key element in the study of the world.

Economics involves the basic survival of all humans in their quest to meet their material needs. As such it is concerned with the allocation of natural and human resources, specialization of labor, and value choices. Self-sufficiency, as evidenced in hunting and gathering cultures and in many agricultural societies, tended to be traditional, but as cultures became more urban the emphasis was upon change. There

are close ties between economic, political and technological-environmental aspects.

Education and Socialization are concepts often neglected in the area of world studies. It seems ludicrous that the social institution in which our students are encapsulated for so long a period of their lives receives so little attention. Socialization is concerned with the informal ways by which culture is transmitted to the young of any society as opposed to the formal process of education. Modern education, with the scientific rationale may, indeed, be a force for change.

Figure 2. Circle B — Political concepts

Concept Cluster B: Power and Conflict Resolution

The focus of the second circle is on the political area of international studies, since it is through political institutions and processes that our world operates. Politics is concerned with the allocation of power and the means of resolving conflict between those striving for power. Past history often was written concerning wars, yet the importance of emphasizing conflict resolution is apparent if we give heed to the devastation that will result from another total war.

Political ideas have usually been considered within the context of the western tradition. However, within the broad sweep of human history, the concepts included within this sphere are basic since they refer to processes and organizational structure inherent in any political system, past or present.

Governmental structure refers to the way in which societies are organized. Within a tribal society the social and political structure may be identical, but as political structures diversify and specialize in an effort to meet the needs of a complex society, varied groups emerge. In a democratic society, three branches of the government emerge, as well as bureaucracies.

Governmental functions are those activities that political groups engage in to protect their society, allocate human and material resources, and provide for the well-being of their members. Early cultures frequently were conceived with religious functions, and all governments tend to perpetuate a tradition. Since all governments contain vested interests

concerned with power, the key role is the resolution of conflicting demands within a structure that does not threaten the government's stability.

Leadership and authority are requisites to the functioning of any society. Throughout history, attaining and passing on leadership functions was a major problem. Even those authorities sanctioned by religion were not safe, and the connections between religion and politics often led to power struggles that altered both institutions. The key conflict that has plagued this concept has been the sharing of power and the limits to authority.

Laws are developed in every culture to regulate the actions of the group and allow for order. Even societies with no formal legal code develop unwritten laws and taboos that all are expected to obey. Those who do not may be subject to punishment that ranges from loss of privileges and goods to physical punishment and even death. All cultures also provide some means of enforcement and often specialized groups are given power to enforce laws that give them new claims on authority.

Political processes are necessary to regulate the varied functions and roles of government. In a democracy, we associate political processes with the ways in which citizens are permitted to exercise citizenship roles in the control of their political organization. In more authoritarian types of government, political processes still have to be established to guide the operation and control of power and provide for resolving conflicts, both within the government and when two political forces come in conflict.

Nationalism is a concept that emanated from western Europe in the 15th century and has permeated the entire world. Prior to this time, loyalties were to a leader or a center of power such as the Roman Empire. People came under a single authority, but there was little unity among these diverse groups. Nationalism is based upon a unity of a people under a single government. Ideology, a common language, the development of a tradition, and symbolic representation such as patriotic songs, heroes, and flags have all served to develop ethnocentric views that solidified nationalistic power bases.

Imperialism is a natural outgrowth of power. Since the rise of nationalism, people of various nations have often welded together for ideological and economic reasons to fight other nations or, more frequently, to overcome less-developed peoples and amass colonies. Thus, imperialism has been a major source of conflict through the ages. As a population increased and leadership centralized, wars were fought over territories. As one society developed a superior military technology, it often conquered neighboring people and instituted a new way of life.

Internationalism is a new phenomenon that is not a part of imperialism since it connotes cooperative interaction among sovereign nations. This is the basic theme of the third sequence of global education and is considered a key element of the present and the future world.

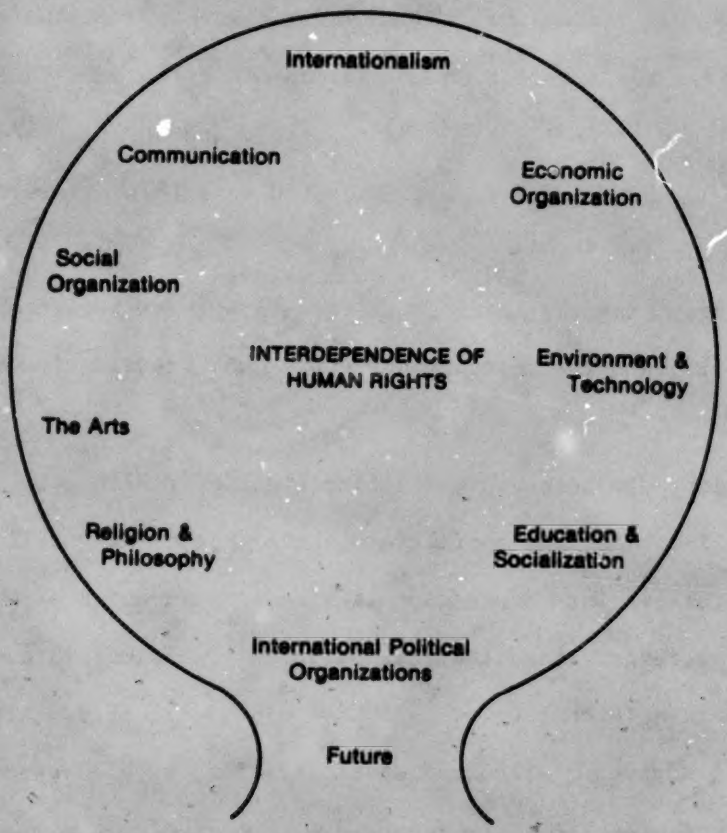

Figure 3. Circle C — The present/future world

Concept Cluster C: Interdependence and Human Rights

The third circle in the sequential development of global understanding is perhaps the unique and most important part of this system since it is the portion so seldom taken into consideration. It is an attempt to view the present and the future based upon an historical development of the actions of the human race. It turns back to a consideration of the universals, but with special reference to the world

we live in today. The central concept of interdependence indicates the need to consider the interaction of nations and cultures. The concept of human rights is a central ideal of our nation, and any understanding must consider the human factor. It will be noted that this circle is open-ended since many ideals project into the future. Because of the critical nature of certain issues, specific universals such as technology, economic interdependence, and the international-political organization often receive emphasis.

The concept of Spaceship Earth clarifies the reality of interdependence and the need for resolving conflicts without destroying our linked and fragile existence. Interdependence is a reality in our modern world where trade patterns, communication, political decisions, humanitarian efforts, and intellectual growth all have global significance. As technological advances influenced specialization, people became dependent upon others. The need for natural resources and the growing number of nations, particularly in the less developed areas of the world, have brought the realization to even the more powerful countries that their very existence is dependent upon cooperative interaction with nations and peoples all around the globe.

Human rights is also an integral concept that is a central part of the interpersonal global scene. Through the leadership of the United Nations and its Declaration of Human Rights, the people of the world have become cognizant of the importance of human rights. Under this declaration, the civil liberties mentioned in the American Bill of

Rights have been expanded to include the economic rights that President Franklin D. Roosevelt articulated.

It is recognized that counterforces are at work on the global scene. The nationalism of the emergent nations is in juxtaposition to interdependent cooperation. There are political forces in the world which either ignore or misinterpret human rights. However, it is the position of this program that the constructive and positive aspects of our global view must be emphasized in the educational system if we are to hope for a peaceful, secure and happy existence.

To indicate some of the specific concerns and the linkages that occur between the central concepts and subconcepts of the universals, the following suggestions are provided. These suggestions are based on the premise that long-range solutions are more important than short-range answers to problems, since the latter might easily lead to political and environmental decisions that could destroy our existence.

In the realm of economics, an isolationist policy might temporarily solve some domestic unemployment problem, but it also might lead to a world economic depression. This could result in the development of a military stance by many nations which could threaten the world's stability and lessen opportunities for individual freedom and dignity.

Another economic reality is the growth of new types of economic organizations. The first is nongovernmental. Multinational corporations have been established in many areas of the world. Their economic power is frequently greater than the majority of nations; yet they are beyond

the control of any single nation. This condition indicates interdependence, and it could have a salutary effect upon national rivalries. However, it also could lead to the abuse of power and to economic colonialism.

Within governmental economic organizations, regional groups have been formed to facilitate economic interdependence. The European Economic Community is one of the first and most important organizations of this type. A more recent development is the formation of the Organization of Petroleum Exporting Countries (OPEC) whose actions raised the price of oil and brought about a disruption in the world's economy. Other single commodity areas are thinking of similar organizations so that they can obtain a larger share of the pie.

All of these developments have been hastened by the technological advances in transportation and communication. Instantaneous communication by space satellites has made neighbors of all peoples. The transmission of information via radio, television and written correspondence would not be possible without cooperative interaction among nations of the world.

Environmental concerns and technology must be considered crucial elements in any global understanding. The energy/environmental dichotomy affects everyone; yet seldom is this a consideration in our courses on international relations. For the first time in history the growth of industry threatens our shared and sometimes finite supplies of natural resources. These resources are scattered over the world with the distribution pattern not exactly matching an undisciplined consumption pattern. Furthermore, the development of many resources and the refinement of them have the potential for poisoning or destroying the

environment. The future health and livelihood of all are threatened. Pollution of one part of the ocean, for instance, may easily affect people in other areas of the world.

Another dichotomy, population/food, is a major concern that has implications for almost every universal. The science of medicine has facilitated a vast increase in world population, but it has also offered alternatives to uncontrolled population growth. However, these alternatives are often limited by religious and philosophical considerations. Changing patterns of family organization also affect population. The agricultural sciences have created a revolution in food production, but economic and political considerations bear heavily upon the continued progress of agricultural development. Perhaps the most critical deterrent to solving this problem is in the area of education. There are great discrepancies in the distribution of knowledge through educational systems. Frequently, traditional sources of authority are the only ones capable of providing information to people in developing nations.

The problem of war is also crucial. The sophistication of military weapons begs our world to seek alternatives to military opportunism. International organizations have been formed to control the present critical situation, and the usual forms of diplomacy exist and work in tandem with regional associations. Not only does the Security Council of the United Nations attempt to alleviate problems, but other organizations such as the North Atlantic Treaty Organization and Organization of American States play important roles in maintaining peace.

One of the most interesting developments in our current world is the proliferation of international nongovernmental organizations. These groups, often devoted to intellectual and creative efforts, are having a profound effect upon our realization of the interdependence of life on our planet. Developments in communication and cultural exchange have furthered this trend. The possibilities for individual enrichment are exciting; yet other elements of our political systems restrict the free flow of information. Many political leaders fear freedom in nondemocratic nations, while commercialization in democracies often evades controversial issues and aims at mediocrity. It is imperative that we educate citizens to understand the reality of our global community. We must clarify issues, consider alternatives, study change and establish priorities for the benefit of all humankind.

An illustration can serve to pull these interrelated ideas together. Three interlocking circles (see Figure 4) are presented as a visual review of the sequential development of global issues. The hope is that the interrelationships shown will offer better ways of making global education a vital part of the educational process -- one with implications for many areas of the curriculum. Only through an integrated approach can global education lead us to the full development of the human personality.

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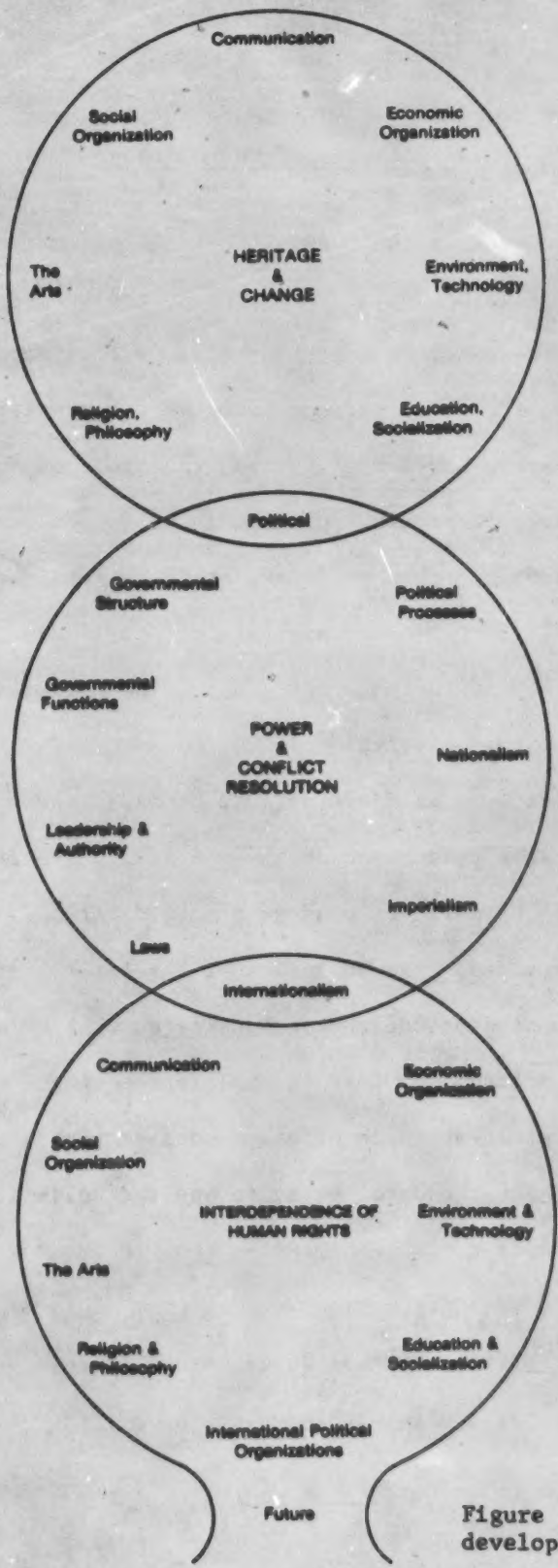

Figure 4. The sequential development of global issues

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Application of the Approach

The three spheres of development that are presented in this paper must be considered in historical and geographical context. It is suggested, that the major concepts addressed within each sphere must first be applied to the students' current frame of reference. For example, in the area of education and socialization, the students should be encouraged to explore their views of formal and informal education. (It is a strange phenomenon that we demand students spend 12-plus years in formal education, yet we seldom ever explore this major influence on their lives.) Each of the universals should be explored from the students' personal frame of reference.

At this point a major decision must be made. Should one proceed by using cross-cultural comparison of the specific universals or should a specific area of the world be used as a model? At this point, no specific answer can be provided. The advantage of the first approach is that the universals which students have just considered will be examined in many cultures and the reason for further exploration of the concept is easy to grasp. The second approach offers several advantages. First, it permits the students the opportunity to see the holistic or integrated view of a culture or nation. Secondly, most resource materials available are written about specific nations or regions. This approach also facilitates the use of history to show developmental change and places emphasis on the environmental limits within which change occurs. It might be

advisable to think of two arrows intersecting the three spheres; one labeled history (time) and other labeled or geography (space).

This leads to an explanation of the sequential development illustrated by the three spheres. It is suggested that the first sphere be the take-off point for all study. After students explore the implications of the terms in their own lives, they can then consider the implications in other lands and other times. It is at this point that groups of students could be allowed to pursue individual investigations of specific universals based upon their interests. However, it is imperative that the teacher synthesize these efforts for the entire class if an integrated view of life is to be maintained.

The fact that this approach has been developed with the learning process as its foundation should facilitate continuous learning. This tends to reduce the fears of coverage; yet a well-balanced curriculum review should take the following questions into consideration:

1. Is a balance of cultures provided; i.e., developed and developing nations, communist and noncommunist nations, and western as well as nonwestern nations?
2. What are the strengths of the teaching staff?
3. Are there certain ties between your community and any particular area of the world?
4. Does the program developed allow students to pursue individual interests?
5. What written, nonwritten, and human resources are available?

In the pages that follow are tentative lists of subconcepts grouped under each major concept. These will show more concretely the differences

in emphasis on the integrating concepts in the center of each circle. The lists are far from complete and only suggest specific concerns that might be include within this system. Readers are encouraged to add other concerns as they prepare to use this approach in their classrooms.

CIRCLE A -- CULTURAL UNIVERSALS

1. Heritage and Change
   a. Continuity
   b. Cause and effect
   c. Diffusion
   d. Innovation
   e. Cultural lag
   f. Evolution
   g. Revolution

2. Communication
   a. Symbolization
   b. Perception
   c. Language
   d. Oral traditions
   e. Written traditions

3. The Arts
   a. Visual Arts
   b. Music
   c. Dance
   d. Literature
   e. Decoration and costume
   f. Crafts
   g. Architecture
   h. Tactile Arts

4. Social Organization
   a. Kinship and family structure
   b. Social groups
   c. Social control
   d. Institutions
   e. Leadership
   f. Role and status

5. Economic Organization
   a. Needs and wants
   b. Scarcity and choice
   c. Supply and demand
   d. Money and barter
   e. Savings and investment
   f. Opportunity cost and trade off
   g. Production and distribution
   h. Profit
   i. Government control/regulation
   j. Economic imperialism
   k. Cycle of poverty

6. Environment and Technology
   a. Natural resources
   b. Climate
   c. Spatial relations
   d. Regions
   e. Climate
   f. Topography
   g. Natural resources
   h. Food and diet
   i. Ecology
   j. Applied science
   k. Agricultural Revolution
   l. Industrial Revolution

7. Religion and Philosophy
   a. Beliefs and values
   b. Ritual and ceremony
   c. Life, death, and life after death
   d. Relationship to nature
   e. Relationship to humans
   f. Ethics
   g. Major world religions

8. Education and Socialization
   a. Enculturation
   b. Customs and mores
   c. Life cycles
   d. Sports and games
   e. Educational systems
   f. Learning
   g. "Kultur" vs. culture

CIRCLE B -- POLITICAL

1. Power
   Conflict Resolution
   a. Compromise
   b. Consensus
   c. Arbitration
   d. Mediation
   e. Judicial review

2. Governmental Functions
   a. Protection
   b. General welfare
   c. Allocation and regulation of resources
   d. Foreign power

3. Government structure
   a. Constitution
   b. Government agencies
   c. Separation of powers
   d. Types of governments

4. Political Process
   a. Citizenship
   b. Party system
   c. Decision making
   d. Interest groups
   e. Public opinion
   f. Electoral process
   g. Protest

5. Leadership and Authority
   a. Selection
   b. Limitation
   c. Succession
   d. Popular sovereignty

6. Laws
   a. Civil rights
   b. Legislation
   c. Enforcement
   d. Judicial system
   e. Crime
   f. Punishment
   g. Codes of law/common law

7. Nationalism
   a. Patriotism
   b. Ideology
   c. Unity
   d. Ethnicity

8. Imperialism
   a. Militarism
   b. Colonialism
   c. Trade
   d. Acculturation
   e. Assimilation

9. Internationalism
   a. United Nations
   b. Peace
   c. Serenity
   d. Economic cooperation

CIRCLE C -- INTERNATIONALISM

1. Interdependence
   a. Social
   b. Economic
   c. Political
   d. Intellectual
   e. Environmental
   f. Aesthetic

2. Human Rights
   a. Civil liberties
   b. Economic rights
   c. Educational opportunities
   d. Universal Declaration of Human Rights
   e. Covenants on Human Rights for Women and Children

3. Communication
   a. Propaganda
   b. Censorship
   c. Communication networks
   d. The Language Curtain; misunderstanding among people with different languages
   e. International regulations, e.g., International Telecommunication Organization
   f. International travel and exchange
   g. Computer language

4. Social Organization
   a. Population
   b. Family patterns
   c. Human services
   d. Urbanization
   e. Class systems

5. Economic
   a. Unions
   b. Cooperatives
   c. Corporations: national, transnational and multinational
   d. Developing/developed nations
   e. Regional trade organizations, e.g., European Economic Community
   f. Regulation of finances, e.g., World Bank

6. Arts
   a. Environmental planning
   b. Diffusion
   c. Societal control
   d. Copyrights
   e. Video production
   f. Film making
   g. Photography
   h. Cultural exchange

7. Environmental and Technology
   a. Green Revolution
   b. Electricity, nuclear power
   c. Pollution
   d. Biological/chemical war time
   e. Space exploration
   f. Development
   g. World Health Organization
   h. Food and Agricultural Organization
   i. Transportation
   j. Sanitation
   k. Medical technology

8. Religion and Philosophy
   a. Freedom of religion
   b. International church organizations, e.g., World Council of Churches
   c. Ecumenical movement
   d. Occultism
   e. Missions
   f. Rationalism
   g. Materialism

9. Education and Socialization
   a. Universal education
   b. UNESCO
   c. International professional organizations
   d. Technological education
   e. Modern/traditional life styles
   f. Preventive health; World Health Organizations

10. International Organizations
   a. United Nations and organizations
   b. Regional government organizations
   c. Nongovernmental organizations, e.g., Red Cross
   d. Professional organizations

Chapter 2

GLOBAL EDUCATION: AN OVERVIEW

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It's the same world no matter where on the planet you live.

The implications of this statement are finding a growing acceptance, and they are stimulating a variety of educational responses across the country. Viewing the earth as a single unit or the world as a global society is, of course, not a new idea to those who have studied world affairs during the past 50 years. But widespread acceptance of the need for a "new" approach to education based on such a notion is a recent phenomenon.

The notion may have first been firmly planted in the public mind when in 1969 pictures of the earth taken from 240,000 miles in space flashed on TV screens around the globe. The traditional way of viewing the world as made up of peoples living in separate entities that had contact in war, trade, and tourism -- but otherwise shared little in common -- seemed suddenly limited and outmoded. The world as a system -- or as a number of systems interwoven into a single unit -- and the interrelatedness of life on Planet Earth began to take shape in the public mind.

The moon landings stirred our imaginations, but for many of us it was the oil embargo of 1973 that translated the notion of interrelatedness

into a reality. More recently the Three Mile Island mishap on the Susquehanna River in Pennsylvania served to remind us that "we all live in Harrisburg" ("We all live in Harrisburg," 1979). This is the case not only because millions of people in the industrialized world live close to nuclear power plants but also because what happened there affects the whole world's efforts to cope with the complex issues involved in finding safe, dependable sources of energy. An even more recent reminder is the 1979 oil crisis, which has brought back rationing and long lines at the gasoline pumps. All of these events, combined with increased trade, tourism, and transnational communication, demonstrate that we all are "riders on the earth together."

More Knowledge and Understanding of Our Global Age Is Needed

The recognition of the growing interrelatedness of life on Planet Earth and of the role transnational interactions play in life on Main Street, USA, has increased the citizen's and the nation's need for sophisticated knowledge of international, political, economic, and cultural phenomena. There is widespread acceptance of the notion that imparting such knowledge requires highly trained specialists familiar with international issues and processes and the languages and cultures of various peoples and areas. Training of these specialists and widespread dissemination of their knowledge and insights are important elements in any effort to improve public understanding of the nature of

our world. Turning to highly trained specialists, however, should not blind us to the need for widely diffused public understanding of transnational interactions, global processes, and the unity and diversity of cultures, nations, and peoples. Our safety, our prosperity, and our way of life require that citizens acquire the knowledge and skills needed to understand and to influence international interactions and processes.

The Importance of Elementary and Secondary Education

Research tells us that the process of acquiring concepts and attitudes about the world begins early in life and that what is learned at more advanced levels must build upon what has been previously acquired. For those who do not go beyond high school, global studies ends at that point, with the exception of what may be learned from the media. While a small minority of college or university students specialize in international or foreign area studies, most college graduates have had few formal courses in international studies. Thus, for most citizens the public schools may well provide the single most important opportunity for acquiring basic knowledge and attitudes about international events and processes. In addition, improvements in international studies at this level are essential if improvements at college and university levels are to be expected. Thus, it is clear the foundation for global understanding must be laid at the precollegiate level.

Numerous Efforts are Underway

Recognition that interactions among peoples and nations may be a significant factor in life-styles and careers in the 21st century has stimulated numerous educational efforts in government circles and at all levels of education. Already underway are a number of local, statewide, and national efforts to improve school global studies. The Presidential Commission on Foreign Languages and International Studies, the U.S. Office of Education (USOE) Task Force on Global Education, the work of the Council of Chief State School Officers, the National Association of Elementary School Principals, the National Association of Secondary School Principals, the National Education Association, and the National Council for the Social Studies are but a few of the many organizations working to improve educational programs in foreign languages and international or global studies (cf. ICIIE, 1979).

A number of states have adopted guidelines or resolutions and offer a variety of incentives and services for improving and expanding global or international studies in the schools. Delaware, Florida, Illinois, Indiana, Kentucky, Michigan, Minnesota, New Jersey, New York, North Carolina, Pennsylvania, and Utah are among those states making special efforts at present (Collins, 1978; Weatherford, 1977).

If one adds the numerous local and regional efforts, the numerous outreach projects associated with USOE-funded language and area studies centers, and special projects such as the Center for Global Perspectives in New York, the Mid-America Program in the Midwest, the Center for the

Teaching of International Relations in Denver, and agencies such as the Asia Society, the African-American Institute, and the Overseas Development Council, it is apparent that many individuals and institutions are concerned about and attempting to improve global or international education.

Some State, Regional, and National Efforts

A number of guidelines are available for developing programs in this area. The Pennsylvania Department of Education statement "An Integrated Approach to Global Education," which is included in this volume, offers a rationale focused on the use of concepts and a developmental sequence that emphasizes the present and future as well as the past. In this approach, a number of concepts and ideas are identified and classified under three main headings: Heritage and Change, Power and Conflict Resolution, and Interdependence and Human Rights.

In "Education for a Global Age: What is Involved?" Robert Leestma (1979), Associate Commissioner for Institutional Development and International Education, USOE, lists five main areas that need to be addressed in coming to grips with the realities of world conditions and issues: (a) the unity and diversity of the human species, (b) international human rights, (c) global interdependence, (d) intergenerational responsibility, and (e) international cooperation. Leestma suggests that the competencies and sensitivities that schools need to help students develop include:

1. Some basic cross-cultural understanding, empathy and ability to communicate with people from different cultures.
2. A sense of why and how humankind shares a common future--global issues and dynamics and the calculus of interdependence;
3. A sense of stewardship in use of the earth and acceptance of the ethic of intergenerational responsibility for the well-being or fair chance of those who will come after us (Leestma, 1979, p. 6).

The Commission on Schools of the North Central Association of Schools and Colleges, in cooperation with the Kettering Foundation, is sponsoring a program in School Improvement through Global Education. The themes of the program are: (a) valuing diversity; (b) developing effective working relationships with others; (c) understanding the world as an interdependent system; and (d) understanding prevailing world conditions, the process of change, and emerging trends.

Prepared to help local school districts, Guidelines for Global Education and Global Education Bibliography (publications of the Michigan Department of Education) provide a definition, goals, and criteria for program development and self-assessment in global affairs. As evidence of Michigan's involvement in global affairs, the Guidelines list the following data:

A. Michigan ranks first in the nation in dollar value exports.

B. Michigan is exceeded in total exports by only seventeen nation-states of the world.

C. Thirty nations maintain foreign consular offices in Michigan.

D. Michigan has seven international ports within which U.S. Customs operate.

E. Over 7,000 foreign students attend schools, colleges, and universities in Michigan.

F. Michigan has over 100 organizations engaged in international activities.

G. Michigan International Trade Division has offices in Brussels and Tokyo.

H. Many foreign businesses have established offices and production facilities in Michigan.

I. Michigan has over eighty multinational corporations.

As can be seen, Michigan's role in global affairs is already extensive. This global role must be enlarged beyond the special interests of the representatives of business, politics, and the military. In consequence, educators, students and the total community need to come to understand and be involved in this reality. They should have the opportunity to receive formal and nonformal educational experiences that will prepare them to engage in the dynamics of global interdependence. (Michigan Department of Education, 1978, p. 1)

This statement stresses the importance of identifying the variety of ways in which life in our states or local communities influences and is influenced by global affairs. It also makes more visible and concrete the nature and implications of interdependence. As Dubos (1979) has pointed out, we need to "think globally and act locally."

Another example is a handbook distributed by the Council of Chief State School Officers (1977) entitled Your State in the World. This

publication provides some 30 activities or exercises demonstrating ways of collecting, organizing, and analyzing information about the world in your state/your state in the world (cf. Bennett, DeGood, & Smith, 1976; Ely, Bertram, McClellan, & McCanna, 1978).

The World and the School

Designing educational responses to the challenges of global interrelatedness, cultural diversity, and finite natural resources requires not only an awareness of the nature of world trends and developments and an awareness of how children learn but also a sensitivity to the realities of educational change. Schools are complex human organizations. Simplistic schemes disregarding the many influences which affect what schools do or the kind of support teachers need are unlikely to have much impact.

For example, efforts to improve global education in schools must take into account the fact that decisions about what should be taught or emphasized involve many individuals, agencies, and interests. These include local curriculum committees, state departments of education, professional associations, textbook publishers, accrediting agencies, parents, special interests, and students. Improvements also require specific practical steps to strengthen existing programs, expand the impact of successful experimental efforts, and, where necessary, stimulate new initiatives.

Globalizing Existing Courses

Helping teachers to review, rethink, and revitalize their courses is essential to improving and expanding global perspectives in the nation's schools. Recognizing the realities of existing curricular patterns, and the manner in which "new approaches" must accommodate or relate to these courses, is an important first step.

Teachers and specialists in all disciplines need to ask themselves how existing courses can help students to acquire a global perspective. For example, how can history, with its well-established place in the social studies curriculum, become a better vehicle for understanding the realities of today's world? Not all approaches to the study of history make equally valuable contributions to the development of global perspectives. In fact, some kinds of history promote ethnocentrism and are destructive of a world-centered frame of reference.

Global approaches to history are becoming more common (cf. McNeil, 1963; Stavrianos, 1979; Weitzman, 1974). Also increasing are the number of comparative and regional histories that go beyond the study of a single nation and identify crucial concepts or ideas that are common to two or more nations, cultures, or people. Properly used, the comparative approach can be a powerful tool in highlighting the commonalities in human experience and in the historical development of nations. Students can begin to see that the history of their own nation or region has similarities, parallels, and analogies in the histories of other peoples. They might also see the significance of Edwin Reischauer's argument that

> the historical experience of other civilizations have in them as much relevance to us today as our own. History to be relevant today . . . must encompass as much as possible of the total experience of mankind . . . No educational system could be expected to teach future . . . voters much about the bewildering diversity of other societies. (Reischauer, 1976, p. 15).

The use of historical episodes drawn from different periods of history might well be used to increase student understanding of the impact of technological change. In addition, there is the increase in nongovernmental transnational contacts over the past 20 to 50 years. All these factors, and their impact on American society, might help students to develop a global perspective while increasing their understanding of the importance of history as a determinant of political developments and outcomes.

Geography, another widely offered course in social studies, might well address the manner in which developments in transportation and communication have reduced the isolating effects on human affairs of space and distance. The importance of international trade and foreign investment to our local and national economies could readily be dealt with in economics courses. The role of state governments in promoting foreign investment, the sale abroad of products grown within the state, or the impact on local food prices of government policies in importing or exporting foodstuffs are topics that could promote global perspectives in American government courses.

The opportunities to integrate global perspectives into existing discipline-focused courses should not blind us to the issues and events that require interdisciplinary approaches. Food, energy, pollution, resource depletion, and human rights, for example, are complex issues that

do not lend themselves to treatment within a single discipline. It is important that education foster a perception of issues that embraces insights and transcends a single discipline approach.

Other Nations' Efforts Can Help Us

Examining the way certain events or topics are treated in other nations can also help students learn to detect biases, including their own, and to contribute to global perspectives. Books such as As Others See Us (Robinson, 1969), Verdict on America (Robinson, 1974), and The American Revolution: Selections from Secondary School History Books of Other Nations (Barendin, Hauch, Rose, & Wanner, 1976), are examples of this approach which uses excerpts from history books used in other nations. Education for International Understanding: The United States as a Case Study, compiled by the Ministry of Education of Japan (1978) and translated by the Education Department of the Asia Society, provides unusual opportunities for us to see ourselves as others see us.

There is a growing volume of material from other countries -- translated into English — that demonstrates the approaches used to enhance global perspectives in other nations. This trend, together with the increasing number of students, tourists, and professional and business people from other countries in our midst, creates a multitude of opportunities for students and teachers to learn about and to participate in global affairs.

Citizenship in a Global Age

Citizen education — a major traditional overall goal of our schools -- requires that in a global age we learn to take full advantage of these educational opportunities. Responsible and effective citizenship today requires a global perspective.

Citizenship has been changed by the globalization of our lives. The outside world increasingly impinges on us, creating new conditions and situations to which we, as individuals and as members of different groups, react. The decisions we make individually and collectively more and more affect the well-being of not only the 90% of humanity now living beyond our borders but of future generations as well.

Our decisions have both transnational and transgenerational consequences. Such a world requires competency to recognize and accept the need for change -- and to make sound judgments. Among the important areas in which judgments are being made today are: (a) managing cultural diversity; (b) managing conflict and violence; (c) managing cultural change; (d) managing inequities in distribution of wealth, health, safety, and education and power; (e) managing human-biosphere relations; and (f) managing population growth.

Competencies relating to life-style decisions, work-related activities, social action, and political activities are important in the exercise of citizenship in a global age. They include the competencies needed to identify and assess the significance of the contacts and connections between life in Hometown, USA, and life elsewhere in the world,

and to see these connections as opportunities to participate in and to influence the way the world works.

Conclusion

The interrelatedness of life on Planet Earth, the importance of an enlightened public in a democratic society, and local, state, and national efforts to improve and expand global education make it likely that prospects for progress in education for a global perspective will continue to improve. Programs such as those of the Pennsylvania Department of Education and Research for Better Schools are essential if such prospects are to become a reality.

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Chapter 3

SCIENCE/TECHNOLOGY EDUCATION IN A GLOBAL PERSPECTIVE

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In the spring of 1979, two events combined to galvanize the attention of the American people, in spite of their steady diet of living-room spectaculars. Both events dealt with aspects of a single major concern: energy. These two events -- the Three Mile Island nuclear incident and the liquid fuel problem characterized by long lines at gasoline stations -- underlined for a significant fraction of our population several propositions which many of us find uncomfortable. Among these propositions are the following:

- Our vulnerability with respect to some things which we have tended to take pretty much for granted. Things that for several generations have seemed to be in inexhaustible supply are now perceived as having finite limits which we are approaching rapidly.
- Some limitations of science and technology in certain high impact areas. Science and technology do not and can not solve all problems, even when given direction and financing.
- The extent of our misperceptions regarding our capacity for self-sufficiency, even in areas which we pioneered. We are not now, nor are we ever likely to be again, the self-sufficient nation of rugged individualists which our history leads us to view ourselves as.

The upshot of these propositions is a growing realization by the American people of the interaction between science/technology and social, political, environmental and geographic factors. More specifically, and more to the point here, is the realization by the science/technology education community of a need for a more focused recognition of this interaction at all levels of education.

The three propositions noted above are not really new. Indeed, reflections of the second can be found in the current school science curricula (although the level of surprise associated with current recognition suggests that the idea has not "taken" widely among students). Environmentalists have stated for many years the need for planned action stemming from the first. The third, insofar as it reflects misperception, should have been laid to rest at least by the end of World War II.

Acceptance of these three discomforting ideas leads to a whole series of realizations. There is a connection between the statement of a petrogeologist regarding the level of oil reserves in the United States and the incidence of death by starvation in drought-ridden areas of North-central Africa. There is a connection between the health of the agri-chemical industry in the United States and the health of the economies of India or Egypt. There is a connection between the rate of growth of the nuclear industry in the United States and the unemployment rate in Japan. It is unlikely that a dramatic scientific breakthrough in the near future will lead to resolution of our growing energy crisis; but a technological effort building on extant knowledge and given direction

by well-reasoned socio-political decisions might. The image of science as a pure search for truth independent of social forces and aimed at increasing our confidence in our level of understanding of our natural surroundings has had to give way to an image of an interactive, socially conscious pursuit carried on by persons having lives and values outside the laboratory.

In short, science has taken on a heightened social responsibility. Scientists have "gone public" in their expressions of concern over social issues and the relationships between their scientific pursuits and the well-being of the community. Witness the organization called Concerned Scientists taking a public position on the spread of nuclear military capabilities; or the strict controls the scientific community placed on itself in the matter of the early probings into genetic engineering. It follows that the scientifically literate citizen must come to place science in perspective against the social milieu in which it functions.

The role of the science education community in all of this is reasonably clear: science in the schools must reflect the realities of science as an enterprise; i.e., science must be viewed in global perspective. The citizen-in-the-making must not be allowed to develop a picture of science as a relatively isolated pursuit carried on in a social vacuum by persons who either are not socially aware or, worse, do not care how their efforts relate to the rest of society.

In order to ensure that students do see science in a global perspective, the preservice preparation of science teachers and the continued education of in-service science teachers must reflect the

interrelatedness both of the sciences with other areas of academic pursuit and of the social, political, and geographical entities which make up our world. In other words, we must promote the concept of global education through influencing the curriculum and the instructional process. Before considering how this might be done, however, it is necessary to examine briefly the present educational situation.

The State of Science in General Education

It can reasonably be said that the present configuration of the basic education system insists that all or nearly all pupils will have a substantial exposure to science instruction by the time they leave the system. The amount and quality of this instruction varies widely, however, with the tendency generally being to leave schools and school systems pretty much to their own devices in selecting and organizing their science programs. One nationally known science educator describes the resulting situation as "chaotic."

Some generalizations can be made, however. The variation is perhaps greatest at the elementary school level, ranging from no science at all to quasi-formalized science from the primary grades on up. To add to the variations, science may be taught either by a specialist or by the regular classroom teacher.

It is more difficult to generalize about the middle school level which may include various organizations of grades from four to nine. At some point, however, perhaps most typically at that point where the

conventional junior high school grades begin, science takes on a more formalized and departmentalized character. Instruction is carried on by persons trained in science teaching. Curriculum organization varies perhaps as much as it does in the elementary schools but the most likely model to be expected is the "layer" model. A typical junior high school, for example, will offer a year of life science, a year of physical science, and a year of earth and space science. Although any of these offerings may be taught by a person certified in "general science," it is not uncommon to see persons having more specialized certification, such as "biology."

The senior high schools tend to require biology of all students in grade ten, with further science exposure being elective and generally chosen by students planning for college. The layer model again obtains, with biology, chemistry and physics separated from one another in their consideration. At both the junior high school and senior high school levels, the predominance of the layer organization for curriculum is, in part, a function of the availability and acceptance of a number of commercially available science courses prepared by broad-based development groups.

In summary, the typical exposure to science instruction includes the possibility of a seriously integrated elementary school experience (although this is by no means a certainty) having the aims of developing process skills and maintaining interest and curiosity, with sheer factual acquisition a second order goal. In addition, there may be three or four

years of science instruction at the secondary level in which the goals are more oriented toward acquisition of facts and concepts and organized around discipline distinctions. A general theme running through science instruction today is that science students should come to see science more nearly as the scientist sees it; i.e., as a process through which knowledge about our natural environment is generated and organized, and ideas tested with the aim being to decrease the level of uncertainty of our understanding. (Note the influence of the second of those three propositions with which this paper began.)

In order to reach the greatest number of persons, global education efforts in science should concentrate on grade levels 7-10. Adult education, a rapidly growing area, is a second level worth consideration, although at this time science seems to be in relatively low demand among participants in adult programs.

The reasons for selecting the grades 7-10 levels include:

1. the relative flexibility of the curriculum;
2. the availability of a high percentage of instructional personnel with science training; and
3. the capacity of the science offerings at these levels to reach nearly everyone who passes through the basic education system.

Further support is offered by research into the development of children's cognitive capabilities, particularly as it relates to instructional programs in the sciences at the secondary level. Although the conclusions are not firm yet, it appears likely that there is a mismatch between the intellectual demands of the science curriculum as it is now organized

and the intellectual capabilities of a significant fraction of the children. This projects a need for curricular reform, although the magnitude and directions are unclear. If the development of a truly global perspective as a frame for science instruction is accepted as needed, then the time to do it is near at hand.

Parenthetically, it should be noted that science represents a unique potential for exemplifying the global view. Although there is little world-wide agreement about the idea of democracy, the ideas of science, even the more abstract ones, tend to be universal. Momentum is momentum whether described in English, Russian, or Swahili.

Science contains as a part of its considerations, already in the curriculum, the essence of the very notions fundamental to the development of a global perspective: such ideas as interdependence, continuity, conservation, pervasiveness of organizational structures, chain relationships, niche, community, evolution, and universality.

As an example of the potential for developing a frame for consideration in the development of global perspective, consider the following. Dr. Barry Commoner, a noted biologist and environmentalist, has recast the well-known three laws of thermodynamics into a form in which they apply directly to the problem areas of energy and environmental protection, and perhaps in an even broader sense to a global view of science, at the local and world levels:

- You don't get something for nothing.

- Everything goes somewhere.
- Everything is connected to everything else.

These three statements seem to summarize the situation in which all of us -- including the science/technology education community -- find ourselves; further, they suggest the direction in which we must move, or at least a thematic framework for movement.

Finally, some comment seems appropriate regarding the success of the schools in communicating what might be termed "social action" type information. Results in this arena seem to have been less than spectacularly sucessful. For example, in a recent study of urban junior high school pupils' knowledge of environmental problems and the sources of that knowledge, a Temple University doctoral candidate found that the media were perceived as being the greatest source of information about the environmental situation, followed by the home, and then the school. This is not an indictment of the schools, but certainly suggests that the schools are not fulfilling their potential in this area of community importance.

What Must Be Done?

Several general steps need to be taken by the science education community toward the long-term goal of global education.

First, science instruction needs to be "decompartmentalized." Although science in the schools is perceived as a program, with threads running through it and binding together a K-12 goal structure, in

reality the articulation necessary to ensure programmatic continuity is far too often lacking. This leaves program components disjointed. For example, articulation between the elementary schools and the junior high school or middle school is simply absent in many systems. Further, the adoption and use of externally developed programs which may be internally integral but are not necessarily complementary, produces a "layer" effect, separating the sciences into relatively insulated areas. This is perhaps most serious from the junior high school level through grade ten, where a large fraction of the students receive the last science instruction they will encounter in the basic education system. If the students do not see the sciences interrelated, then the liklihood of their placing science into a broader perspective is greatly diminished if not eliminated.

To accomplish this decompartmentalization, it seems necessary to:

1. place greater stress on general science as a curriculum entity; and
2. prepare teachers -- both in the preservice and in-service phases — specifically to teach general science from a global perspective.

This latter clearly calls for some new approaches in integration of subject area knowledge and in methodology. The former suggests not only a change in the view of science offered to children, but a serious change in the curricular model utilized to provide that view.

Second, a decompartmentalization of science instruction is needed with respect to other fields. Traditionally, science has drawn upon

mathematics as its primary supporting discipline. Clearly, today, science instruction must interact with the social studies if it is to present a realistic picture to students of what science is about in today's world.

Specifically, it seems necessary to:

1. build curricular bridges between the sciences -- notably the study of science in general -- and the social studies; and
2. prepare teachers specifically to co-teach cross-disciplinary courses.

The former suggests the possibility of curriculum development projects, a time-consuming process, but a beginning could be accomplished through the vehicle of something like an "issues" seminar. (Yes, junior high school students can carry on in the seminar format.) It seems imperative that the beginning be accomplished at an educational level where all students are taking work in both science -- preferably general science -- and the social studies. This suggests the junior high school (or middle school), although one would hope that this interaction could be a recurring activity through the entire basic education experience.

One might argue that the recent research evidence, which suggests that a significant fraction of secondary school students are not yet formally operational (as defined by Piaget), points up some limitations on the ways in which they can deal with issues cutting across disciplines. The goals are set in developing awareness, the basis for perspective. Producing interdisciplinary problem solvers is not a realistic goal;

the development of a global perspective based on awareness of inter-relationships is.

An example of an issue which might be considered in such a format is suggested by Commoner's paraphrase of the thermodynamic law: everything goes somewhere. How to dispose of the increasing amounts of garbage generated by our throwaway-minded society is a problem having a local view, a regional view, and a global view, as well as one that provides a clear interaction between science/technology and the social studies. While most people do not really care what beomes of the garbage placed at curbside once the collection truck has picked it up or what becomes of waste once it has been flushed down the toilet -- don't care until the system breaks down, that is -- the problems of disposal have reached crisis proportions in some areas and, indeed, affect us all in ways which we often do not realize. For example, many large cities on the seacoast have for years loaded their garbage on barges to be towed out to sea and dumped, and have done so legally. But what effects will be produced by the changes in the nature of garbage associated with our associated with our current life-style? Garbage today is not what it used to be. Today it contains increasing amounts of toxic or toxic-forming substances, in part the result of our penchant for substituting convenience for elbow grease. What effect does the release of these substances onto the sea floor have on the life forms which exist there? On us, since we make many of these life forms part of our food supply? On our long term prospects for feeding the world's population, since

the sea has a fairly high potential, currently unused, for producing nutrient materials suitable for humans?

A logical extension of this problem is that of the disposition of chemical wastes. While past practices have had a very direct effect on the residents, past and present, of the Love Canal area of Buffalo, New York, what has been done to ensure that present practices will not lead to another Love Canal twenty-five years hence? We have experienced a marked increase in our usage of substances having even more potential for endangering human and other life. Have we protected future generations to the fullest extent of our ability?

A further extension of the problem leads to the disposal of nuclear waste, a global problem of truly enormous proportions. If the world energy situation makes it necessary for the continuation and even expansion of our capacity to generate nuclear power in order to fill the gap until other technologies can take over, what will be the magnitude of the disposal problem?

The dimensions of this set of issues are, indeed, the dimensions of global education. The problems exist in a time frame; they have a history and a present, both of which affect what can be done toward resolution, and they contain most serious implications for the future. The problems have a space dimension, as well. They exist as local considerations, but are inevitably tied to broader concerns. There is about them an inexorable progression from local to regional, to national and even to global scope. And they have a cultural-historical dimension. Customs, traditions, mores and laws will impinge on their resolution to aid, to interfere, and to trigger conflict.

Clearly, these are issues — or facets of one issue — which cannot readily be dealt with by either the science teacher or the social studies teacher alone. The questions they raise draw upon a knowledge of science and technology in order to provide the bases for decision making, and upon a knowledge of political science, economics, sociology, and history for decision-making mechanisms and the parameters in which they operate. They exemplify the kinds of questions which responsible citizenship imposes upon us collectively for resolution.

Cross-disciplinary consideration of these and other issues places certain incumbencies on the disciplines concerned: (1) the curricular model and basic methodologies must be agreed upon and joint planning substantially completed in advance: (2) the necessary background information from both discipline areas must be available or a suitable mechanism must exist for acquiring it en route; and (3) several levels of outcomes must be agreed upon and provided for.

All of this requires a fairly high level of commitment by a school or school system and by the personnel involved. It cannot be done "out of the hip pocket." It presupposes a willingness to enter into the needed curricular changes and a capacity to implement them — the curricular bridges noted earlier. It almost surely will entail some retraining of personnel. At the very least, it will present some management problems. In short, it cannot be done in the traditional mode of instruction except by a very few highly skilled and knowledgeable teachers.

Some of the questions which may arise and require answers include:

- Can all students really benefit from a cross-disciplinary

approach, from a seminar format? Should more than one "level" be available for students of differing ability? Or is that too far removed from the reality which the global education notion is intended to convey?

- Is it reasonable to expect that an approach made at the early secondary school level can have any material effect on eventual responsible citizenship and decision making?
- Given that the ultimate goal of such a pursuit lies in developing competent, responsible citizenship based on awareness of global interdependence, where should such consideration be placed in basic education in order to reach all of our future world citizens? (Note that grades seven through ten have been proposed earlier in this paper. But is that enough?)
- What consideration should be given to the growing body if information on cognitive development in secondary-school-aged children?
- Is a cross-disciplinary approach really the best answer, or should an interdisciplinary approach be considered?
- From the managerial standpoint, how much time should be devoted to cross-disciplinary activity? From where should it be drawn, and what are the implications of the answer?

Although the answers to these questions are highly individual to schools and school districts and even to teaching personnel, some parameters within which the answers will be found can be suggested.

First, it should be recalled that for three-fourths of the children, neither science nor social studies at the junior high school level forms

part of a preparatory sequence leading to further study of science or social studies. Curricular change is possible. Second, while social studies instruction is mandated throughout the secondary schools, the mandate for science runs out, in practical effect, at grade ten. This sets some curricular boundaries if the goal is to reach all students and if the "issues" approach is held viable. It also opens some doors with respect to those students who elect further science.

Third, the degree to which all students benefit from any approach is masked by larger concerns such as whether all students benefit from being retained in school through age 16. Students will benefit in direct proportion to the energy, thought and sensitivity with which any approach is entered into. Finally, although some longitudinal study would be necessary to ascertain the effectiveness of this or any other approach in developing competent citizens, it seems reasonably assured that no approach will have no effect. What is clear is that something is needed.

Teacher education activities

Three kinds of teacher education activities must be entered into, at minimum.

1. Primary awareness development.

There is no special reason to expect that candidates for teaching are any more sensitive to global concerns than any other group of persons having a similar educational level. The first step, therefore, is to assure awareness. This may be especially needed for science teacher

candidates, who tend to be rather self-sufficient in their subject area. For preservice teachers the certification program should have this built into the examination of the social, cultural and philosophical bases for the educational process. For in-service teachers, a program of reorientation could be part of any of several kinds of in-service programs. (An example of one attempt at this is given later.)

2. Training for co-teaching.

To promote the first level of breath of perspective in the minds of pupils, the bridge between subject areas is the first step. Co-teaching is the most graphic symbol of the bridge. It requires a substantial level of agreement on goals, methods and evaluation which makes necessary a joint planning process. From the standpoint of preparing teachers for this, it is probably best approached in conjunction with curriculum development, perhaps in a workshop format, with teachers working in teams to develop a joint viewpoint with respect to one or more themes having broad implications, such as water utilization or solar energy development.

3. Preparation of generalists in science.

General science at the junior high school level has been identified as an appropriate point to inject global education into education in the sciences. The preparation of generalist teachers in science has fallen victim to the drive for specialization in the sciences. The current "breadth" requirement typical in certification programs (i.e., a year in each of the four major branches of science plus mathematics) does not really do the job. Programs should be instituted aimed at identifying

and preparing science teachers specifically for the junior high school and for the cross-disciplinary step toward global perspective development.

By way of an example of the cross-disciplinary approach needed to develop teachers who will function in the schools with a broadened perspective, the Delaware Valley Center for Studies in Environmental Education has mounted as its first major project an energy education program. This program, supported by funding from outside the Center and offered by Temple University's College of Education, brings together thirty teachers, equally divided between the sciences and social studies, to examine energy concerns ranging from the physics of energy conservation to the economics of energy production. These teachers are engaged in a first-phase global education project. They will, it is hoped, return to their schools prepared to extend the perspectives of their students. It should be noted, parenthetically, that this approach exemplifies the view taken by the Pennsylvania Department of Education that environmental studies should be a joint venture of the social and natural science faculties.

Summary

Science instruction offers a high potential for global education activity. Science, as an enterprise, has displayed a growing social consciousness, visible in many areas today. Recent events have forced all of us to reconsider our view of ourselves as pretty much self-sufficient, calling upon science from time to time when we need a problem solution. The conjunction of science and the social studies in the basic education

system seems to offer the opportunity to make a beginning step in developing a world-sense among students. This will require certain teacher education activities aimed at reaching both preservice and in-service teachers. These activities include awareness development, preparation for for curriculum planning and co-teaching, and preparation of generalists in science for teaching at the junior high school level. These activities could be carried on through the colleges and universities through their regular offerings; however, a conscious program funding effort by the Pennsylvania Department of Education would add speed to the process. In either case, the need is pressing. Global education is, simply, a "must" if we are to prepare students to become responsible citizens in a world in which a narrow, local view is no longer possible.

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Chapter 4

GLOBAL PERSPECTIVES ON EARLY CHILDHOOD EDUCATION

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Early childhood education in the United States was largely shaped by, and takes its present form from, the country's long-standing international outlook. The international perspective is evident in the tradition of early childhood education: the evolution of ideas in Western civilization about the nature of childhood and the value of special experiences for the education of young children. The perspective is currently reflected in the work of early educators to provide global education experiences for the young, and in our celebrating together the International Year of the Child in 1979. With regard to the future, the perspective is evident in our realization that the United States is sadly lacking in national public policies for children and families, while other countries have moved forward with well-planned programs and established governmental policies.

American early childhood educators have never insulated themselves from their colleagues elsewhere. Although major initiatives in early childhood education did not originate in the United States until the 1960s, programs and ideas developed elsewhere have been enthusiastically received here. There is no doubt that the tradition of global cross-fertilization of ideas will continue to serve the international community of early childhood educators as we move into the 21st century.

The Tradition

The word "foundation" is used frequently in speaking of the value of educational experiences in the early years for later development. Many would say the word is overused and trite. However, it must be used again here because our practices and programs are solidly built on an international foundation. The roots of current practices in this country are embedded in the work of European educators dating back to the 17th century. The value of cooperation among an international community of child development and early education scholars and practitioners is evident in current views of child development and in the teaching methods and materials used with young children. "The field of early childhood education as it exists in the United States and most of the free world today rests on the accomplishments of a common core of visionary people" (Frost & Kissinger, 1976, p. 14). The influence of early European educators is pervasive, and a brief look at some pioneers among them documents the origins of contemporary practices and theoretical views of the young child.

John Amos Comenius (1592-1670)

Comenius is regarded by most educational historians as the man who launched the modern education era. A Moravian Bishop, Comenius believed deeply in what he called "universal education." To him this meant educating all children--rich and poor, boys and girls, intellectually able and dull--in formal school situations. His work The Great Didactic is the repository of his educational philosophy and recommendations for

educational practices. He proposed an educational ladder, beginning with a first level, called the mother school, for children younger than 6 years. The vernacular school was for ages 6 to 12 years, the Latin school for ages 12 to 18 years, and finally the university for ages 18 to 24 years.

A major contribution of Comenius in terms of both appropriateness and enduring nature, was the writing of Visible World, the first text using pictures to teach young children. Recognition of the value of play as a learning process and the notion that children learn by doing, both important aspects of current approaches to educating young children, can be traced to the recommendations of Comenius. He maintained that his proposals would have "teachers teach less and learners learn more." His own words serve best to illustrate these points:

> It is a property of all things becoming that they can easily be bent and formed as long as they are tender, but that they refuse to obey when they have hardened. Soft wax can be modeled and remodeled, hard wax will crumble. The young tree can be planted, replanted, trimmed, and bent to any shape; not so the grown. So also the hands and limbs of man can be trained for art and craft only during childhood, as long as the sinews are soft. (Comenius, cited in Ulich, 1954, p. 342).

John Locke (1632-1704)

Much of John Locke's philosophy on education is contained in a series of letters written to his English friend, Edward Clarke, while Locke was in political exile in Holland. Later the letters were collected and published as Some Thoughts Concerning Education (first published anonymously in 1693). This comment by Locke sounds as if it

could have come from a modern piece on child rearing:

> [We must recognize] good parental example rather than colorless and hardly remembered rules and admonitions; the self-defeating nature of excessive corporal punishment; the necessity of allowing children their own amusements and frivolities, that is, letting them be children when they actually are; and, perhaps most importantly, the wisdom of paying close attention to their different temperaments and rhythms of development, and thereby accommodating the educational programs to the child, not the child to the program. (Locke, cited in Braun & Edwards, 1972, p. 36).

Locke's comment indicates his regard for the biological givens of the child, but he is best known for his emphasis on the influence of the environment. His phrase "tabula rasa" (empty slate), and his statement that "I imagine the minds of children as easily turned, this or that way as water itself" (Locke, cited in Ulich, 1954, p. 356), document his awareness of the power of the environment. In this sense, he was one of the very early behaviorists.

Jean Jacques Rousseau (1712-1778)

Emile, Rousseau's treatise (although a novel in form) on child rearing and education, was published in 1762. In it Rousseau proposed the principle of "negative" education, a concept based primarily on the notion that we should receive education from nature. In his view, books were to be forbidden, and learning was to occur from contact with the natural world. His major contribution to early childhood education was to describe four stages of child development. The first two stages are particularly relevant here. The first spanned the period from birth to age 5; recommendations focused on physical activity. The second

encompassed the period from age 5 to 12; here he recommended that children learn exclusively through personal, direct experience. Some educational historians view Rousseau as the grandfather of modern child psychology because of his emphasis on developmental stages and his break with the then prevalent tradition by suggesting that children were not miniature adults. As stated, he valued play as a learning tool and stressed that differences between children and adults ought to be considered in planning education; i.e., teachers should key on the children's interests and their natural instinct to play and to engage in physical activity.

Johann Pestalozzi (1746-1827)

Unlike the abstract theorists we have sketched, Pestalozzi actually taught children. Indeed, he put many of Rousseau's beliefs into action, particularly trust in the natural development and growth of children. Pestalozzi drew a distinction between the basic socialization of the child, which was to occur in the family, and early education, which was to be a part of formal schooling. Our present notion of readiness derives from Pestalozzi's idea that there are individual differences not only in the interests of children but also in their rate of learning.

Pestalozzi believed that direct, manipulative experiences, or "object lessons," should precede verbal instruction. Many of the concepts he used in working with children are today important components of British informal education and American open education: interage grouping, peer tutoring, use of real-life experiences in the curriculum, and emphasis on concrete experiences. Many of Pestalozzi's ideas are

set forth in Leonard and Gertrude (1781) and How Gertrude Teaches Her Children (1801). He speaks of Gertrude's method as follows:

> The instruction she gave them in the rudiments of arithmetic was intimately connected with the realities of life. She taught them to count the number of steps from one end of the room to the other, and two of the rows of five panes each, in one of the windows, gave her an opportunity to unfold the decimal relations of numbers. In every occupation of life she taught them accurate and intelligent observation of common objects and the forces of nature. (Pestalozzi, cited in Ulich, 1954, p. 59)

Friedrich Froebel (1782-1852)

In 1837 a pupil of Pestalozzi's, Friedrich Froebel, founded the kindergarten in Germany--a landmark event initiating modern preschool education. As no other educator or philosopher had done before him, Froebel recognized the impact of the industrial revolution on children and promoted educational experiences to counter industrialization's deleterious effects on urban life. The American kindergarten is a direct descendant of Froebel's innovation.

Froebel believed in stages of development and viewed early childhood as the foundation for later life. He believed education should be based upon the child's inner unfolding and viewed the child as a tender plant needing protection and care from adults. The analogy from nature is in keeping with the term "kindergarten" that Froebel coined. In fact, his was not a school, but a garden for children.

Froebel advocated a curriculum based on the natural interests of the child. Play and active involvement in a stimulating learning environment were major instructional vehicles. He designed special

learning materials, "gifts" consisting of balls, cylinders, cubes, blocks, and others. These were intended to elicit the discovery of measurement, numbers, and other concepts. His "occupations"--activities such as cutting, weaving, folding, drawing, painting, and other crafts--were to develop skills and encourage creativity.

Mrs. Carl Schurz, one of Froebel's pupils, began her own kindergarten in Watertown, Wisconsin, in 1855, marking the beginning of the kindergarten in the United States. American kindergartens developed as separate from other schools and became known as places to play, whereas first grade was "real" school where children did "real" work. That division continues to this day, although developmentally it is an artificial one. A close tie between kindergartens and primary grade programs is necessary, and many early educators maintain that the philosophy of the kindergarten (as conceived by Froebel) should prevail in the primary grades as well.

Maria Montessori (1870-1952)

Montessori is known for many achievements. The first woman to earn a medical degree in Italy, she is best known for the development of materials and a method for teaching children. Beginning in 1907, she began working with children aged 2 1/2 to 7 years from the slums of Rome in her casa dei bambini, Children's House. Montessori's didactic materials were designed for sense-training and were to be self-administered and self-correcting. Many of our current ideas about the importance of sequencing, hierarchies, and stimulus differentiation are

a result of her work with instructional materials. In this sense, she was among the first educational technologists.

She believed that the process of learning was far more important than the content or products, and thus her writings are devoted to describing the "how" of learning. The curriculum of the Children's House consisted of practical life experiences; sensory experiences; and academic exercises in reading, writing, arithmetic, and subjects such as geography and botany. The classroom was a prepared environment filled with self-teaching activities that matched the child's level of physical and mental development. Montessori did not even use the word "teacher," because she viewed the learning process as something a child does, not something a teacher does to a child. Those we call teachers were urged to be keen observers, knowing when the child was ready for new experiences. Emphasizing the principles of cooperation, kindness, and responsibility, Montessori taught us, more than anything else, to look at the child and take our clues for planning individual programs from the child himself or herself. This focus on individualization and the focus on basic learning processes are legacies valued by all early childhood educators, whether or not they use the Montessori method and materials.

Jean Piaget (1896-)

Piaget, a Ph.D. in natural science from a Swiss university at the age of 21, became interested in psychology and eventually developed a theory of cognitive development. Even with his strong science

background, Piaget rejected the idea of experimentation in psychology. Instead, he observed children in naturalistic settings as a means of learning about human development. He postulated a series of stages of intellectual development and described the internal processes responsible for the development of intelligence. The essentials of his theory were originally published in Origins of Intelligence in Children (1952).

Piaget's view of development is organismic; he recognized the limits and advantages of both heredity and environment and hypothesized that development occurs when the individual's self-organization is matched or challenged by experiential events. Program practices and instructional methods derived from Piaget's concept of development are built on two major assumptions: (a) The child progresses through sequential stages of development that must be taken into account in program planning; and (b) active participation by the child through manipulation and organization of experiences is essential for development. Montessori and Piaget are in accord in their belief that no person is educated by any other person--it must be done by the person himself or herself or it is never done. By and large, Piaget's work was ignored in this country until the 1960s, but since then there has been vigorous exchange of ideas among Piagetian psychologists and researchers from many countries. Piaget's theory of cognitive development is now a frequent source for early childhood programs in the United States.

The Present

As a nation, we come to 1979 with a rich tradition in early childhood education. Its basic principles were, for the most part, developed elsewhere and transplanted here. While American attitudes toward child rearing and early education have been shaped by international and national professionals engaged in the exchange of ideas, they also represent the great variety of peoples from many backgrounds who have immigrated.

In the early stages of their arrival, immigrants tended to cluster together, and their ideas, values, and practices regarding their children gradually made an impact on American culture. Each group transferred to their adopted country the values of their homeland. In turn, they were gradually shaped by what was occurring in their new country and they adapted to the ideas, values, and practices regarding children brought in by others. These diverse sets of values, then, have become the foundation for our present policies toward children and families.

School Programs for Children

The diffusion of beliefs and practices in child rearing and early education, drawn from a variety of cultures, is but one example of the interconnectedness of the world. Education, as an area of inquiry within which to consider this interconnectedness, presents certain dilemmas. Central among these is what the major goal of education is to be in a country. Becker states the problem succinctly:

> Each nation seems to be educating its young toward the preservation and expansion of national power. The facts of life seem to be moving the other way. The penetrating influence

> of technology, the spectacular increase in transnational participation, the increasing importance of world public opinion, and the growing recognition of a common fate are eroding the narrow nationalism of the past. Increased openness about feelings and identification are helping man overcome some of his more destructive and hostile motivations that underlie rampant nationalism.
>
> Unless men are willing and able to work in groups, they cannot long survive as individuals. Conformity to local habits and customs is necessary, but in modern times, every individual is a member of many different groups, each claiming his loyalty. (Becker, 1973, p. 12)

If the objectives of the educational system are properly formulated, schools will play an important role in the global society. "Designed to promote the idea of humanity, to connect man to man, global education should help people adapt to a world community" (Becker, 1973, p. 23). But can such abstract ideas and values be a part of the curriculum for children in the period called early childhood, the period of development from birth through age 8?

While courses in social studies that include specific content in global education are not feasible for this age group, a program of social learning focusing on understanding and interacting with other people is an appropriate beginning. Such an approach will better prepare children to understand the content about globalism in their later schooling.

Development experts see the age of 3 as a turning point in the social development of children. At about that time, children are less preoccupied with satisfying their own basic needs and more interested in trying out new roles and experiences to discover their autonomy as persons as well as their relationships with others. At this early

stage, the "significant others" are not the citizens of other nations; rather, they are family, relatives, and neighborhood friends. Although children are still basically egocentric, they want to know how these other people and events affect them personally. It is also at about this time, 3 years, that many children move into some formalized preschool program or interact frequently in an informal play group. This, then, marks the introduction to social learning.

Many forces in addition to a planned school curriculum have an impact on social learning, the most immediate influence being the child's own neighborhood. It is in the neighborhood that young children begin to understand that all families are not identical, begin to adapt what they have learned at home as they see other ways of interacting. Children's direct experience is still the most powerful factor, but their ideas are beginning to be influenced by what they observe elsewhere. TV is another important influence, with daily viewing conveying information about people and events both near and far away.

In the early years, when the social learning curriculum involves social interactions rather than content about other lands and other people, teachers still have a responsibility to be current and accurate in their content background. An important goal is the acceptance of cultural pluralism, which:

> requires avoidance of comparison of cultures for the purpose of establishing which is "better" or "worse." Instead, human creativity is valued for inventing the many different ways there are of coping with man's universal needs for love, family, food, shelter, spiritual and moral values, aesthetic expression and brotherhood. (Robison, 1977, p. 238)

The social learning curriculum for young children has traditionally taken four basic forms: concentric-circle base, child development base, structures of the discipline approach, and a process-objectives approach. These approaches are reviewed in detail by Robison (1977), as are modified approaches more suitable in a global age.

Robison (1977) argues persuasively that the social learning curriculum for young children should be built upon what we know about the processes of learning. She points out that the process approach does not provide easy answers about content, since it speaks to the way children learn, not to the what. Obviously, we cannot develop learning processes of inquiry, observation, evaluation, and others in a vacuum; we still must teach something. She recommends several approaches to finding content that has applicability to global education.

Teachers can use broad content themes selected from contemporary concerns. Saving energy and reducing pollution are examples of content suitable for children as young as 3 years. Another approach is to use the theme of children's value concepts, themes involving the need for a strong self-concept, the need to feel valued by others, and the need to understand others. Feelings of belonging, respect for others, and becoming a decision-maker are examples.

Closely linked to the content and value themes is the social action approach, which primarily involves children in efforts to improve the quality of life. Five-year-olds who engage in "earthkeeping" activities each morning in the environment around their school are learning about

respect for others and gaining firsthand experiences about the effects of pollution. If the classroom is viewed as a community, the social action approach is most suitable for young children (Joyce, 1970). Robison (1977) provides an extensive list of social action themes and related activities for young children. Among these are teaching toward the social goals of: the golden rule, human rights, rule making, responsibilities, creativity, social contributions, and social institutions (p. 270). Whatever the approach, teachers must be aware of the larger implications of the social learning curriculum. Accurate, unbiased materials must be used and teachers must have a high regard for the modeling impact of their behavior on children.

1979, The International Year of the Child

Twenty years ago, the U. N. General Assembly adopted the Declaration of the Rights of the Child. In 1979, the International Year of the Child, we celebrate a year of advocacy on behalf of all the world's children. The year is directed toward awareness and action-oriented programs that will better meet the special needs of children everywhere and ensure that their rights are valued.

ON BEING A CHILD

MANKIND OWES THE CHILD THE BEST IT HAS TO GIVE. . .

The right to affection, love and understanding.
The right to adequate nutrition and medical care.
The right to full opportunity for play and recreation.
The right to a name and nationality.
The right to special care if handicapped.
The right to be among the first to receive relief in times of disaster.
The right to learn to be a useful member of society and to develop individual abilities.
The right to be brought up in a spirit of peace and brotherhood.
The right to enjoy these rights, regardless of race, color, sex, religion, national or social origin.

U.N. Declaration of the Rights of the Child

During the International Year of the Child the approach will be both global and local. While there will be no international conferences, each country is being asked to devote its efforts to both governmental and nongovernmental programs and celebrations that can be expected to effect lasting changes for the benefit of the children of that country. The U.N. is participating in the exchange of information through the establishment of the International Year of the Child Secretariat. National commissions have been organized in all but a few of the countries of the world. In the United States a national commission has been appointed by President Carter to examine the problems of our children and to work actively with local, state, and national organizations and agencies to begin to solve problems.

An estimated 120 million children will be born in 1979. In the year 2000, what will their first 21 years have been like? Statistical information prepared by the World Bank in recognition of the International Year of the Child is published in the World Atlas of the Child (1979), projections for the future based on what we know now about children's lives. The information is summarized in the January 1979 issue of the IYC Report, a newsletter published by the U.N. Secretariat, as follows:

> The largest number of children reside in the low-income countries.
> In a typical low-income country, the number of children will be nearly double in the year 2000 from the 1975 population figures. This will be true even if birth rates fall as expected.
> In 1970, 108 children out of every 1000 were estimated to have died within their first year of life in Africa, 41 in Asia, 54 in South America, 24 in Europe and 20 in the U. S.

> In a typical low-income country, 58% of the children attend primary school, but only 9% go on to secondary school. In the industrialized countries, nearly 100% attend primary school and 79% go on to secondary school. (IYC Report, 1979, p. 1)

It is obvious from these and other data that the fate of the world's children is at risk. In the developing countries, health and education problems associated with urbanization and unevenness of opportunity are evident. The pervasiveness of the problems and difficulties of interrelationships among developing and industrialized countries can be seen in the following statement by Indalecio Lievano, of Colombia, President of the U.N. General Assembly:

> During its thirty-first session the General Assembly approved a resolution proclaiming 1979 the International Year of the Child. This was a demonstration of the concern of our Organization for the problems that will have a decisive influence on the future of mankind, as the children born in 1979 will come of age in the year 2,000, the third millenium of our history. Already our planet, in terms of the age of its people, is a young planet. There are more children than adults among the population of the earth. Unfortunately, two-thirds of those children suffer all kinds of deprivations and all kinds of needs.
>
> First of all, we must strive for the recognition of the child as a central part of all economic, cultural and social growth. We must insist that he receives care and love, in terms of giving him better opportunities to be fed, to be protected against disease, to receive an education and, most of all, to enjoy his right to be a child, to be able to live that part of his life without having to face abject poverty, indifference and premature old age. To reach that goal, we must demand that a greater percentage of national and international resources be devoted to programmes for the protection of the child, not only in 1979 but in the years to come.
>
> We must urge the industrialized countries to increase their assistance to the children of the developing world. And not only for humanitarian reasons, but as an essential means to safeguard international peace and security. Neglect of children will produce a hungry, ignorant and resentful world that, of necessity, will create societies that are unstable and prone to violent upheaval.

It is hoped that the International Year of the Child will serve as a bridge to the future. If it does nothing else, it will have succeeded if programs are begun that will benefit generations of the children to come. "It will have reached its goals if it spreads knowledge not only that the problems of children are urgent and immense, but the wisdom and wealth to solve them are at our command. The task is manageable in both scope and time. We know that the world has the means. The question is: Do we have the will?" (IYC Report, 1978, p. 1).

The Future

Between now and the beginning of the 21st century, American early childhood educators will devote major efforts to resolving problems arising from the tension between familial and social parenthood. That is, as more women with preschool children enter the work force each year, as the problem of child abuse and neglect becomes more obvious with each passing month, as the number of single-parent families increases, as we become more aware of the effects on children of problems such as unemployment, poverty, inflation, technology, and many, many others, there is a growing tendency for the state to intervene (social parenthood) in traditionally family functions and responsibilities (familial parenthood). Resolving these tensions tests the strength of our values, and the results are often not productive for children.

We will look to the experiences and policies of other countries for information about our options as we attempt to deal with the problems. Several studies of the international scene in child care and

and early education have recently been completed or are in progress. For example, Austin (1976) presented a thorough and comprehensive review of early childhood education practices in eight countries: England and Wales, Canada, Sweden, France, Italy, Belgium, Germany, and the Netherlands. The shape and substance of current programs and practices differ from country to country as a result of the social, cultural, political, and economic forces unique to each. As is true of the American experience, most of the countries initially organized preschool education to provide for the health and welfare of the poor. Paralleling these early efforts for the poor were programs initiated for children of the well-to-do. Current arguments center on the value of programs for children of all economic levels and the role of governmental agencies in providing such programs.

Austin's report is a rich source of information and policy alternatives drawn from the experience of early childhood educators in other countries. It is limited in only dealing with OCED* countries, but other sources contain information about experiences in other parts of the world. A publication by the U.S. Office of Child Development, Child-Care Programs in Nine Countries (U.S. DHEW, n.d.), is another compendium of information about child-care programs in Canada, France, Germany, Israel, Poland, Sweden, the United Kingdom, Yugoslavia, and the United States. The analysis of policy alternatives for sponsorship of child care is especially well documented in this publication. Information about early education and child care in Russia and, more recently, in China is

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*Organization for Economic Cooperation and Development

increasingly available. All these sources of information can assist us in arriving at the public policy decisions that must be made within the next few years.

A bicentennial volume titled 200 Years of Children (Grotberg, n.d.) includes a statement by John Meier, the then Director of the U.S. Office of Child Development, that encapsulates our current needs for policy. We know the problems, but we have a long way to go in finding the answers. Experiences elsewhere will become a part of the answers, but people must be willing to consider them. As John Meier said, "The best talents of the Nation must be employed to find the most efficacious answers, since these same children and youth, on whom we spend less than 10% of the Federal budget and who represent nearly 40% of the population, also represent 100% of our future" (p. 2).

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Chapter 5

MULTICULTURAL EDUCATION AND GLOBAL EDUCATION: NATURAL PARTNERS IN THE QUEST FOR A BETTER WORLD

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Growing interdependence of the United States with the rest of Spaceship Earth has provided an impetus for the development of comprehensive K-12 global education. Its orientation is toward the future -- to help prepare young people for life in a world of dynamic change, increasing interrelatedness, and complex human and institutional diversity. But global education does not stand alone as a curricular force in the quest for this goal. Paralleling the growth of global education, just as strongly rooted in societal realities, and with an equally cogent imperative for future citizenship has been another powerful movement for curricular reform -- multicultural education (Banks, 1977).

Where global education developed from the overdue recognition of world interrelatedness, multicultural education erupted from the overdue recognition of the significance of ethnic diversity within the United States. Where advocates of global education correctly point to the need for educational institutions to help prepare students for world realities, advocates of multicultural education correctly cite the need for educational institutions to help prepare students for a nation and world of inevitable ethnic and cultural diversity. Among the results of these movements: more states are mandating some form of multicultural and/or global education; publishers are taking steps to multiculturalize and

globalize their educational materials; and teacher education institutions are now being evaluated as to the comprehensiveness and effectiveness of their multicultural component. In other words, multicultural and global education are here to stay.

What, then, is — or, what should be — the relationship between multicultural and global education? To date, not nearly close enough. In the future, it is hoped there will be an integral connection. Multicultural and global education are natural, if often unaware, partners. To be truly valid, multicultural education should incorporate a global perspective to provide world context for its examination of American ethnic and cultural diversity. Likewise, to be truly valid, global education should include a consideration of the relationships of U.S. ethnic groups to the global system and the differential impact of global forces, events, and trends on American ethnic groups.

Although they differ in emphasis, these two educational reform movements are linked by their common concerns. Both seek to improve human and intergroup relations. Both seek to increase awareness of the impact of global and national forces, trends, and institutions on different groupings of people, including nations and ethnic groups. Both seek to reduce stereotyping and increase intergroup understanding. Both seek to help students comprehend the significance of human diversity, while at the same time recognizing underlying, globe-girdling commonalities. Both seek to improve intercultural communication. Both seek a better future for all, through helping to make today's students more constructive future future actors on the changing stage of the world.

In this quest for culturally-sensitive, globally-aware adults, multicultural and global educators need to plan and work together in striving for mutual student goals. Specific content will vary as the curriculum focuses on different topics, themes, concepts, ethnic groups, nations, and culture areas. But whatever the content, educators should strive constantly for common student goals. Together they can be more successful in helping students become "multicultural global literates" -- people with the knowledge, skills, and attitudes to live more effectively, sensitively, and constructively on our multicultural Planet Earth (Banks, 1973).

Common Goals

What are some of these common areas of concern around which multicultural and global educators should rally and which should serve as the basis for cooperation? Following are four examples of such goals toward which multicultural and global educators can strive in partnership through closely coordinated K-12 curricular reform integrated into all subject areas.

1. The development of student understanding of the function of groupness (i.e., the significance of all people belonging to various groups) in our society and in the world.

2. The development of student understanding of the process by which people form images of ethnic groups and of foreign cultures.

3. The development of student understanding of global interrelatedness, including its variable significance for persons of different ethnic groups and different nations.

4. The development of skills for living in a world of diversity.

Let us look briefly at these four areas of concern and envision how multicultural and global education can work together for educational progress. Because of the theme of this book and the constraints of space, I will emphasize the multiculturalizing of global education. However, it is equally important that there be a concomitant globalizing of multicultural education in order to provide deeper insights into American ethnicity through an understanding of its linkage to world realities (Cortés, 1977).

Understanding of Groupness

Where do I fit on the map of humanity? Where do others fit on that same map? Multicultural global education should address these questions in order to help students understand those world factors which affect their own lives and the lives of others who belong to the same or different groups.

No person belongs to a group. Each person belongs simultaneously to many groups -- sex, age, economic, social, regional, national, religious, cultural, and ethnic groups, to name a few possibilities. At various times in a person's life, the fact of belonging to one or more of these groups may have a significant, in some circumstances determining,

influence (Cortés, Metcalf, and Hawke, 1976). Multiculturalized global education should help students to develop an awareness that each of us belongs to many groups, to understand how this multigroupness affects values, attitudes, beliefs, goals, and behavior, and to perceive how world trends and events have a differential impact on persons belonging to different groups. A knowledge of groups provides clues to the individual — what global phenomena are likely, although not necessarily, going to mean to members of different groups, including ethnic groups. This understanding of the function of groupness, including the significance of ethnic groups, can provide an important intermediary link between globality and individuality and can help clarify the significance of the globe for local life.

The study of groupness can also provide students with a framework for analyzing the complex interplay of human diversity and global commonalities. While examining international diversity, including the function of ethnicity in other nations, global education should continuously compare and contrast ethnicity elsewhere with the operation of ethnicity in the United States. This should include the study of how Americans of different ethnic groups have maintained, modified, or lost aspects of their foreign heritages; how and why they are similar to or different from those living in their foreign root cultures; and what transnational connections still exist between foreign nations or cultures and U.S. ethnic groups. In this way, the examination of such global concepts as migration, cultural adaptation, and international communications can enhance

student understanding of the experiences of American ethnic groups.

For example, one cooperative effort to address this complex topic -- the relationship between U.S. ethnic groups and their foreign root cultures -- took place under the auspices of the University of Denver's Center for Teaching International Relations. That project compared the transnational linkage of four American ethnic groups -- Black Americans, Irish Americans, Mexican Americans, and Arab Americans -- with their corresponding root cultures -- Africa, Ireland, Mexico, and the Arab world. The four project monographs provide a valuable source for teachers interested in addressing the global concepts of international linkages and intranational groupness (Smith, 1976).

Understanding of Image Formation

How are group images developed -- particularly stereotypes, which poison interethnic relations and impede global cooperation? Beginning in kindergarten, students should be introduced to the ways in which group images are formed, the differences between group generalizations and stereotypes, and the pernicious effects of stereotyping. As various foreign areas and ethnic groups are studied throughout the K-12 curriculum, the global concept of image formation, including the development of group stereotyping, can be examined with increasing complexity. The goals are to help students (adults-to-be) to better understand the process of stereotyping, to detect it in operation, to avoid stereotypical thinking, to use group generalizations as flexible clues rather than as mental strait jackets, and, thereby, to become more thoughtful, sensitive global citizens.

One excellent source for the study of image formation is the "societal curriculum" -- that massive, continuous, informal curriculum of family, peer groups, neighborhoods, churches, organizations, occupations, mass media, and other socializing forces that "educate" all of us throughout our lives (Cortés, 1979). Take just one component of the societal curriculum, television, as an example. One study reported that by the time of graduation, the average high school senior has spent 12,000 hours in classroom and 15,000 hours in front of the television set.

Part of this informal societal curriculum is multicultural and global education (often miseducation). From the societal curriculum, as well as in school, people learn about culture, ethnicity, race, other nations, foreign areas, and the world as a whole. Although some aspects of the societal curriculum increase multicultural and global understanding, other aspects provide misinformation, present distortions, spread stereotypes, and contribute to misunderstanding (Miller, 1979). Studies have shown that many children develop well-formed attitudes about members of ethnic groups and foreign areas, including prejudices and stereotypes, by the time they reach school (Goodman, 1964; Lambert and Klineberg, 1967).

In this respect, the media have a particularly powerful impact, often outweighing school and personal experience. A recent survey of U.S. fourth, eighth, and twelfth graders found that television had the greatest impact on their attitudes toward foreign nations and peoples. An illustration of the negative educational potential of the media occurred during the fall, 1977 television showing of The Godfather Saga, when NBC repeatedly cautioned the audience that:

> The Godfather is a fictional account of the activities of a small group of ruthless criminals. The characters do not represent any ethnic group and it would be erroneous and unfair to suggest that they do.

Convincing and effective? No. Merely gratuitous posturing which could have done little to soften the film's impact on perceptions about Italian Americans. Yet that very posturing dramatized an awareness of the power of the multicultural societal curriculum.

Educators should not ignore, but rather should deal directly with the societal curriculum. They should continuously integrate the study of the multicultural and global content of the societal curriculum into the school curriculum. Through this strategy, young students can become more capable of understanding (rather than being manipulated by) the societal curriculum.

Children's stories, photographs and cartoons (both in print and on film) about different nations, cultures, and ethnic groups, can be used to introduce the global concept of image formation to early elementary school students. In the later elementary grades, advertisements in magazines and newspapers, on television, and even on billboards and bumper stickers can be used provocatively for the study of image making. This study should include such themes as ethnic, foreign, and global images, as well as sex role expectations.

For older students, feature films are marvelous sources for analysis. For the past five years at the University of California, Riverside, Professor Leon Campbell and I have taught a series of courses on film and history. In these courses, students examine different global, crossnational

concepts through the analysis of selected feature films from different countries which focus on common themes. Such global concepts have included economic dislocation and human migration, the conflict between law and justice, revolution, frontiers, and, most recently, race and ethnicity in the Americas. These courses have resulted in quantum leaps in global and intercultural understanding, as students come to grips with both the universality and the different national and ethnic variations of global phenomena (Cortés and Campbell, 1979).

My own research on the history of the themes of ethnicity and foreignness in U.S. motion pictures has convinced me that these two concepts cannot be fully understood in isolation from each other. Ethnic and international image formation are necessarily interrelated. It is impossible, for example, to separate the making and viewing of Tarzan and World War II feature films from the formation of images of Black Americans and Japanese Americans, however bizarre and nonrational the connection!

Understanding of Global Interrelationships

As we become more globally interdependent, events and trends anywhere are increasingly likely to send shock waves throughout the world and affect even the most distant human beings — even those not conscious of that impact. Moreover, the effects are not felt equally by all persons. For example, the global oil crisis has been particularly onerous for the poor, who have less budgetary flexibility for dealing with rising prices. Or as the saying goes, when the United States catches a cold, minority groups in that country usually get pneumonia.

Multiculturalized global education should strive to increase student awareness of the variable ramifications that events, institutions, and global forces have for different nations and persons in different intra-national groups. Whether it is the passage of a local zoning ordinance or the complex financial manipulations of a multinational corporation, the impact will be different for persons of diverse groups. A coordinated K-12 educational process should continuously seek to increase the students' ability to analyze multicultural and global complexity and interrelated-ness. Moreover, the process should help students learn to evaluate how global factors affect their local communities, including the lives of persons of different backgrounds.

Study multinational corporations in kindergarten? Of course not. But educators can begin laying the foundations for students ultimately being able to understand multinational corporations. In elementary grades, teachers can have students analyze how events at school -- for example, the establishment of new classroom procedures or school regulations -- differentially affect various groups of students. Throughout elementary school, students can role play and then analyze children's stories in which events or conditions have variable effects on the different characters. In high school, students can evaluate the significance of a court decision for different ethnic groups, the impact of the construction of a freeway on different groups in the community, the importance for different groups of a world shortage of selected products, and the multiple ramifications of changes in national immigration policies.

Although the complexity will increase throughout the curriculum, student ability to analyze, synthesize, and apply multiperspective thinking should be developed continuously from the beginning of a child's schooling.

Skills for the Future

Both global and multicultural education are deeply concerned with helping students develop skills, as well as knowledge and attitudes, for future multicultural, global living. Following are some examples of skills which are important today and will become increasingly essential tomorrow.

- The skill of weighing multicultural evidence and considering multicultural factors in decisions;
- The skill of taking effective action in intercultural situations and in the face of changing global conditions;
- The skill of assessing future trends and their likely impact on individuals, ethnic groups, and nations;
- The skills of dealing effectively with intercultural disagreement and conflict and developing cooperation across ethnic, cultural, and national boundaries;
- The skill of communicating interculturally, whether interethnically within the United States or internationally around the world.

Take the last, for example, the skill of intercultural communication. The obvious recommendation would be that everyone should learn at least one other language. But while I strongly believe in language study and feel that the world would be better if all global citizens were

multilingual, I am concerned here with aspects of intercultural communication other than second language learning. Schools need to help students — including monolingual students — to develop the skills of observing, interpreting, and becoming sensitive to the nonverbal aspects of intercultural communication and to the variable meanings which the same or similar words (in different languages) have for persons of different cultures.

Body language, gestures, personal space, conversational distance, and social customs: both multilingual and monolingual teachers can teach and both multilingual and monolingual students can learn about these aspects of intercultural communication through multicultural global education. Crosscultural simulations, such as Bafá Bafá and Rafá Rafá, can help students become more observant of varying types of human communication (Shirts, n.d.). Examples drawn from books of Edward Hall, such as Beyond Culture (Hall, 1976), and the recent Gestures (Morris, Collett, Marsh, & O'Shaughnessy, 1979) can help students develop insights into intercultural communication.

Language arts and literature can be multiculturalized and globalized to teach about the intercultural variations of global words and concepts. For example, teachers can use a series of stories by persons of different ethnic groups and nations dealing with the same global theme -- such as family, environment, mobility, home, religion, social customs, and cultural mores. The examination of these stories can help students understand that the same or similar words in different cultural, ethnic,

or national contexts may have both strikingly different connotations as well as commonalities of meaning. The development of the skills of intercultural communication — both interethnic and international -- is a goal toward which global and multicultural educators should constantly and cooperatively strive.

Conclusion

These four suggested areas clearly do not exhaust the range of joint concerns. They illustrate, however, both the challenge and the opportunities for cooperative multicultural and global education. And such education is a necessity for all students — not just ethnic students, students in ethnically-mixed schools, or students contemplating careers in foreign trade or international relations. For all students will ultimately take their places as citizens of our multiethnic nation and our interdependent world.

Beyond this, the word must go forth to all educators that they have a stake in the successes and failures of this crusade. Multicultural and global education are not the private preserves and responsibilities of the social studies. Multicultural understanding and global awareness should be among the goals in all subject areas — literature, music, art, science, mathematics, home economics, physical education, and the rest. All educators share the responsibility for the future.

The challenge is clear. How can we, as committed educators, better prepare young people for living in an ethnically diverse, culturally

complex, interdependent world? Only through coordination, cooperation, and continuous joint efforts can we achieve this goal. If we fail, our nation and the world will be worse places for it.

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Chapter 6

THE ARTS: A WORLDWIDE LANGUAGE

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The Universal Language of Art

Karl Fortess was a painter and, though not one of the great painters in history, he was good enough to teach art at a major Eastern university for many years. He wore a gold tooth, an untidy mustache, and granny glasses and he was rarely at a loss for opinions--which were expressed with a thundering lack of humility and transparent ferocity. On one occasion, when both he and the century were in their early 60s, Professor Fortess announced that "sculpture is what you back into when looking at a painting," which became one of those memorable remarks that stick in the mind but are impossible to use in normal discourse. The remark is appropriate now, however, for it may well be that backing into the arts--sculpture or any other variety--is the best method of relating them to global education. On one hand, the arts offer little toward the immediate solution of the vast international problems that face us today: energy, disarmament, population control, or adequate food supplies; on the other, the arts are indeed global--and in many ways, timeless as well.

Bach's music is loved by millions who do not know enough German to say hello, yet it communicates. Picasso's "Guernica" has captured the sense of helplessness in war that residents of Coventry or Dresden, London or Berlin, Hanoi or any nameless Vietnamese hamlet could readily

share, though they might be unable to talk to each other of the shared terror. It might startle some audiences, who know only vaguely that Shostakovich is Russian, to realize that he is a Communist as well, but it would not dampen their enthusiasm for his music. If there is a role for the arts in global education, it may be based not upon what the arts <u>are</u> but instead upon what the arts <u>are not</u>. One of the things they are not is language-bound. It may, however, be necessary to back into the arts as a language-free medium of communication to realize, not merely that they are there, but that, like the heavy bronze which Professor Fortess backed into, they have substance as well.

Clearly, one of the most obvious and yet one of the most difficult barriers to international understanding is language. If we all spoke the same language linguistically, we might be better able to speak the same language metaphorically; but we do not--at least not in our everyday understanding of what language is. Language for most of us, most of the time, means reading and writing and speaking and listening to words and sentences in which our ideas, our values, our wants, and our needs are encoded. Language, as the word is commonly used, is the bedrock of the back-to-basics movement (where it is euphemistically called communications skills), but paradoxically--at least from the point of view of global education--language is also the ultimate barrier to a free understanding among peoples, partly because what is termed communications skills means learning to read and to write in English only and partly because such skills, in this context, are limited to linguistic

communication. These concepts of communication do not acknowledge the very real limitations of written and spoken language. A string of xxx's in a love letter has meaning, to be sure, but no recipient would ever confuse those xxx's as being what they stand for; they are poor substitutes for the real thing. Nor can even the most enthusiastic, the most knowledgeable, or the most articulate sportscaster substitute for a seat on the 50-yard line. There are some things in life that have to be experienced directly in order to be fully appreciated, kisses and football among them. For the arts, too, there is no language barrier. They never lose anything in translation. In the arts, the elements of communication are not words, but images and sounds and movement, and all people, regardless of place or time, can speak to and understand each other through them. They are truly the only international language.

The arts, then, especially music, dance, and the visual arts, are not bound by the limitations of conventional language. Aestheticians may tell us that they have a language of their own, but the fact remains that it is unnecessary to understand Italian to appreciate Puccini, or English to know what Martha Graham is about, or Spanish to comprehend Goya. Nor, in fact, is it necessary to know ancient Egyptian, Greek, or Latin to fully grasp the Sphinx, the Acropolis, or the Forum; Swahili to admire the forms of a Benin Bronze; or a Sepic River dialect to share the rhythms of a Papuan dance. Nor is it necessary to be a royalist to admire the Holbein portrait of Henry VIII, or be a Catholic to enjoy a Gregorian chant.

Drama and film depend somewhat more on conventional language, though Rashomon is probably as well understood in New York as in Tokyo, and the themes of Shakespeare's plays are not specific to the Elizabethan English in which they were written. Even poetry and other literary arts, though highly dependent upon conventional language systems, are, at their best, independent of time and place. Artists, whether painters or composers, poets or choreographers, may have nationalities but art does not--and, as a matter of fact, artists themselves are a nomadic lot for whom national boundaries mean little. Picasso, the Spaniard, worked much of his life in France, as did Van Gogh, the Dutchman; Chopin, the Pole; and Chagall, the Russian. Benjamin West, the American, became a painter in the court of George III, and James McNeil Whistler was a social lion in Edwardian England two centuries later. Meis van der Rohe, George Kepes, and Walter Gropius worked together in Germany but emigrated to the United States when it became impossible to continue their work under Nazi domination. Such examples, if not exactly endless, illustrate the fact that national boundaries and national origin are less important to artists than is a culturally rich and politically free environment, regardless of what language is spoken or which flag flies over the courthouse.

I do not mean to suggest that the world of art is entirely global or that marked characteristics may not be apparent in the artwork of different nations. The Mexican muralists, for example--Orozco, Rivera, and Siqueiros--used powerful imagery in the service of social protest. Scandanavian design, especially in the crafts and in household

furnishings, is cool, crisp, and functional. American jazz and musical theatre have combined classical and folk art forms to create new idioms that, like the country itself, are amalgams. That art which is self-consciously nationalistic, however, is rarely art. It is more likely to be propaganda undertaken not for aesthetic purposes but as an instrument of national aggrandizement. It is often so blatantly obvious that there is no mistaking it. The paintings of robust, smiling tractor drivers from the Soviet Union, or, more recently, Chinese operas substituting foreign devils of one sort or another for the traditional dragons, are clearly more successful as propaganda than as art.

Implications for Global Education

If the arts are, in fact, a universal language whose meaning can be understood without respect to barriers of geography, language, or time, it seems reasonable to incorporate them fully and freely into programs of global education--and the logic for doing so is impeccable. If language is one of the barriers to better international understanding, then modes of communication which are free of language represent one method of overcoming that problem. Exactly because the arts are language-free--at least to a greater extent than most disciplines--they become ideal vehicles for greater international and intercultural understanding. Right? Unfortunately, wrong! The logic is not flawed, but in education, as elsewhere in life, logic does not always prevail, and in this instance a new problem is created precisely because the arts are language-free.

The coin of the educational realm is words and numbers. Reading, writing, and arithmetic, the classic three R's of little red schoolhouse schooling, have been born again in the back-to-basics movement, and although the Council for Basic Education has included the arts as a necessary component in basic education, there is no discernible evidence that the fourth R, the arts, are even marginally on a par with other subjects in most schools. How, then, can the arts--those quintessential "frills" of education (which school boards left and right are axing from their budgets) be enlisted in the service of global education?

Moreover, if the frilly perception of arts education were not problem enough, there is yet another complication. Many arts educators (this writer among them) have seen the arts justified by every conceivable means. Each bandwagon that comes down the educational road has seen arts educators hanging on the running boards like tourists on a San Francisco cable car. The core curriculum? We were there. Competency-based education? We were there. Right to read? We were there. Creativity? Perceptive acuity? We were there, too. Arts educators have been enormously adaptive to the swings of education's barometer and, much of the time, out of necessity. But what color is a chameleon really? Must the arts always be justified as instruments for some other purpose? Have they no educational validity in their own right? The result of this line of questioning by arts educators has led to a kind of back-to-basics movement within the arts profession itself that is based upon a simple premise: Education in the arts is important because the arts are

important. In this context, the goals of arts education are nobody's handmaiden but are based, instead, upon the primacy of the discipline itself. Therefore, when efforts are launched that will enlist arts educators in behalf of global education, it may seem to many like a return to the bad old days. Regardless of the language-free virtues of the arts as a vehicle for global education, it is clear that a great deal of heavy breathing of one sort or another will have to take place before we can convince either the schools, in which the arts are treated as frills, or teachers of the arts, for whom the arts have intrinsic educational merit.

It appears, then, that the idea of using the arts in global education because of their language-free virtues might place advocates of the idea between the rock of the arts as educational frills and the hard place of teachers for whom any instrumental use of the arts is unacceptable. Under these circumstances a compromise is clearly in order but, just as clearly, it has to be a compromise that "packages" the unique communicative qualities of the arts more tolerably without doing violence to their underlying concepts.

Packaging

The very idea of "packaging" might seem devious--as suggested by phrases such as "a book isn't known by its cover" or "all that glitters isn't gold." Still, packaging is central to any sales or promotional campaign--"It ain't what you say, it's the way that you say it" or

"Promise her anything but give her Arpege" being classic examples of stating an intention compellingly through indirection. In the immortal words of Ogden Nash, "A girl whose face is covered with paint/Has an advantage with me over one whose ain't," and that premise is equally true in promoting the most venal or the most noble of goals. Everything from soap to politicans is packaged for easy consumption and, if necessary, it might be necessary to package the arts in global education as well--not because such packaging improves the product but merely because it enhances it, like adding perfume to soap or tailfins to an automobile.

Packaging such as this might take a number of forms, but one which has the vitamin-like advantage of supplementation is to tout the arts as one of the universals of human experience, regardless of the temporal, geographic, historical, political, or nationalistic distinction that may otherwise separate peoples. And it has the incidental advantage of being true. No nation, no culture, no civilization, from the most primitive paleolithic hunters and gatherers in the furthest corners of the outback to the most urbane and technologically sophisticated, is without its art. The longest, the most comprehensive, and the most revealing record of what it means to be human is recorded mankind's art. From the paintings in the caves at Altamira to the sculpture of Henry Moore, and from Indians beating hollow logs to Arthur Fiedler at the "Pops," this record has been known, not through words that half the world cannot read, but pictured and sung for all to see and hear. Moreover, these artistic footprints are not only historic but contemporary as well. A comparison

of the songs sung and the dances danced around the world at any given moment can provide enormously useful insights into the bonds that unite all people--and sad to say, into some of those issues that divide them as well. Such a package is irrefutable; it is real, it is compelling, and it denigrates neither art nor global concepts of education.

New Approaches Recommended

The implementation of the arts in global education programs will, however, require some new approaches for which neither teachers of the arts nor most schools are yet prepared. First, it will require that arts teachers change much of their current practice, which is based upon a performance-production scheme in which most students paint paintings and sing songs. This kind of teaching is based upon using artists as behavioral models; that is, most classrooms are full of neophyte painters or piano players, and many teachers frankly consider themselves to be "artist-teachers." Obviously, if the goals of art education are to be tied to global understanding, a totally different approach is required from that of classrooms full of young artists. Teachers who have built their careers upon such teaching will have to zero in on other aspects of the arts that are more conceptual, more historical, more critical, or comparative. They must, in short, redirect their teaching. They must teach students how to study a painting, not just look at it. They must be able to tell students how to analyze a piece of music and, in fact, how to really listen to what they hear. Given two similar works, students should be taught not only which is the "best" but also why and in

what context; moreover, students should be able to defend their selections. This is, frankly, not what most teachers of the arts do best, but it is what they must learn to do tolerably well if they are to function within a global context of education.

Second, because most schools are not warehouses of art or Meccas of culture, the sanctity of the classroom as the arena in which learning takes place must be overcome. Artists might be brought into the school to give demonstrations and to talk about their work, particularly those artists whose work can provide understanding of a culture different from that of the students'; or the students may be taken to where the arts are--typically in museums and concert halls but, for these purposes, perhaps in neighborhood festivals, ethnic cultural centers, or religious institutions as well. In any case, the logistics of moving students to where the art is, or of moving art to where the students are, can be complex, time-consuming, and expensive. Moreover, because such learning takes place under circumstances that might be considered recreational rather than educational, a different mental set must be accommodated by students, teachers, artists, and arts institutions as well.

Third, recognizing that not all art is portable and that much of it that is most valuable for global education exists beyond the bounds of transporting students, we will also need to strengthen in-school instructional resources. This may be particularly important in the realm of audiovisual softwares--slides, films, reproductions, records,

audio- and videotapes, and the like--as well as in the arts library, where the cost and bulk of such materials, as well as unfamiliarity with how they can be used, have severely limited such collections.

Fourth, though teachers of the arts are not isolationists in the usual sense of the word, they are, nevertheless, often isolated in the schools. They can usually be found behind closed doors at the far end of long corridors, where the noise and mess they make will be out of sight and hearing of the rest of the school (and, perhaps, where the pleasures they can provide to students are undercover as well). With some stroking they can often be lured out of their dens, however, and with a few kind words they can perform some extraordinary educational tricks. Teamwork is not the strong suit of arts teachers, though, and voluntary team play is almost unheard of. Therefore, if teachers of the arts are to become effective in collectively promoting the goals of global education, they will probably have to be coerced into doing so. It is an unkindly thought, to be sure, but these teachers of the arts are the best (and often the only) aesthetic resource in schools and, like other resources, they must occasionally be exploited.

Fifth, teachers of subjects other than art who are in any way involved in global education programs should be sensitized to the arts. Artworks are not only aesthetic statements but often carriers of other information as well. What kind of houses, clothing, transportation, tools, implements, and weapons are shown on an architectural relief? Who seem to be the important figures in a painting; how are they

differentiated; and how do others seem to relate to them? What do the famous public baths in Rome say about the contemporary political processes, technology, public health, and personal values? What can be said about the Japanese tradition of public bathing in comparison to that of the Romans? Obviously, some familiarity with Roman architecture, even for a teacher who has never taken a course in classical art history, would be helpful in understanding other cultures--and not only the ancient Roman but the contemporary Japanese as well. For teachers of the arts, the arts may embody aesthetic values; but for non-arts teachers, artworks can serve as documents that carry other kinds of information. Therein lies the value of the arts for them. It is, however, information that non-art folk might find difficult to extract because it is not encoded in the linguistic symbol systems with which they are familiar. It must, instead, be immediately apprehended from direct perceptual data, and while that can be very difficult for the uninitiated, it is absolutely necessary.

Sixth, public attitudes toward the arts in the schools contrast markedly with attitudes toward the arts in other contexts. If the arts are to function in behalf of global education, important bridges have to be built among these divergent attitudes. Frank Keppel, Commisioner of Education under President Kennedy, spoke of the arts as a "growth industry," and his remarks at a 1976 conference in Aspen, Colorado, provided ample statistical support for this contention. He also pointed to a comparable body of educational data that gave quite the opposite

picture. Therefore, we need to bring some of the community support for arts into the schools and, if it functions in behalf of global education, so much the better--for the arts, for the schools, and for global education as well.

Summary

In summary, the arts can offer global education two things: first, language-free insights into the lives and times of other peoples that would be difficult to obtain through more conventional educational means; and second, because every culture, without exception, has created its own art forms, a variety of cross-cultural common themes, such as fertility figures (including madonnas) or the myth of the hero, can readily be identified and studied. Before the arts can be fully used for these purposes, however, resistance from within the educational community (where the arts are treated as frills) and from within the arts education professions (where instrumental uses of the arts are suspect) must be overcome. Finally, the implementation of such a program will require specific attention in six areas: (a) the reorientation of arts teachers away from the performance-production model and toward an emphasis on teaching art concepts, (b) a breakout from classrooms and school building into more aesthetically rich and culturally diversified community resources, (c) the strengthening of the arts resources in school libraries and in audiovisual software, (d) a socialization of teachers of the arts to bring them into the mainstream of cooperative educational programming, (e) arts training for non-arts teachers to enable them to use the arts

for their potential as information-carrying documents, and (f) a campaign to alter educational attitudes toward the arts that will bring them into closer accord with those of surrounding communities.

Chapter 7

A GLOBAL-EDUCATION PERSPECTIVE ON FOREIGN LANGUAGES

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(a) There is hereby established the President's Commission on Foreign Language and International Studies, . . .

(b) The objectives of the Commission shall be to:

(1) Recommend means for directing public attention to the importance of foreign language and international studies for the improvement of communications and understanding with other nations in an increasingly interdependent world;

(2) Assess the need in the United States for foreign language and area specialists, ways in which foreign language and international studies contribute to meeting these needs, and the job market for individuals with these skills.

(3) Recommend what foreign language area studies programs are appropriate at all academic levels and recommend desirable levels and kinds of support for each that should be provided by the public and private sectors. (President's Commission, 1978)

The State Board of Education directs the Department of Education to provide leadership in clarifying the obligations, opportunities, and priorities basic to the fulfillment of the statewide responsibility for global education by helping institutions develop global education programs. Global education is any experience designed to increase understanding of social and cultural differences and of relationships among people of different backgrounds and nationalities. The construct "global education" is an umbrella for defining such learning activities as international education, functional and area studies and language and multi-cultural studies. (Pennsylvania State Board of Education, 1978)

Curriculum Requirements provide at least two foreign languages in each school system, one of which shall be a modern foreign language given in a minimum four-year sequence. (Pennsylvania Code Chapter 5, Section 5.75)

Role of Foreign Language Study

One's first impulse is to say that of course the role of foreign languages in international and global education is clear and powerful. Interrelationships among peoples obviously must depend upon communication in a shared language. But at this point the complications begin. There are thousands of languages on earth. Must we be competent in all (certainly impossible) or only in those that most people speak and that Americans are most likely to need? Which languages are they? Can everyone learn one or more languages? Apparent as our global interrelationships and concerns are, why have not most of us mastered another language in addition to our own? Are our teaching methods developing second language competence? Do our content and methods result in the global perspectives we need? When we communicate in a foreign language, are we likely to lay the base for harmonious cooperation or inadvertently arouse conflict? Let us approach these questions systematically.

It is hardly necessary to establish the scope of our international interdependence. Not one major religion originated in either the United States or Europe. We are plagued by international concerns -- the gasoline crisis, development of nuclear energy, pollution, the threat to ocean resources, and our unfavorable balance of trade. Three hundred multinational corporations control 75% of the world's productive capability, do half a trillion dollars of business, and account for one-seventh of the world's collective productivity. Intelsat's membership of 79 countries collectively accounts for 95% of the world's international

telecommunications traffic. In 1977, U.S. News and World Report stated that the value of exports by free world countries increased 15-fold between 1950 and 1976. We have already entered a world in which nationalism, once necessary for development of American independence and resources, has been replaced by full internationalism. We can no longer live alone.

Do we need foreign language mastery to survive? On the one hand, English is used by more people on the surface of the earth than any other language (except Chinese -- if we lump all its dialects together):

> It [English] is the official language of 28 nations and an official language in 16 more. Eight of the 130 or so U.N. delegations use English in their basic working documents. Most multinational corporations including those based in nations other than the U.S. use English as their official language. English is overwhelmingly the language of science. (Anderson, n.d., p. 96).

On the other hand, 80% of the world's peoples do not speak English. "Over 100 million persons speak each of these major world languages: Arabic, Bengali, Chinese, French, German, Hindi, Indonesian, Japanese, Portugese, Russian, Spanish, Swahili and Urdu. The number of Americans expertly trained in at least half of these languages is fewer than 50" (American Council on Education, 1975, p. 8). As it becomes apparent that formerly poor nations have valuable resources we desperately need, and as they achieve independence and national pride, how long will they be content to do business in an alien tongue while we ignorantly depend upon the services of a translator who we hope is competent and conscientious (a situation which President Carter unfortunately had to face -- with disastrous results). Moreover, more than 12,000,000 United States

citizens speak Spanish as their native language, making this country the fourth largest Spanish-speaking country in the world. In the next decade the great growth areas will be in multinational corporations, international banking, and international government. Are we miseducating our youth, preparing them for a world in which they will be linguistic misfits? If language is one tool to shape our world, and if we are barely equipping students with a single language, are we providing them with a stone chisel with which to manipulate an electronic universe?

America's Poor Performance

The seriousness of our neglect of foreign language study is reflected in American journalists' ignorance of foreign languages and cultures. How can they gather and interpret world news? It is not surprising that a recent UNESCO survey of 100 nations found that the United States was lowest in the number of international items featured on commercial TV networks. Recently the U.S. State Department was forced to reduce its foreign language requirements for entrance into the Foreign Service because it could not find enough candidates with requisite skills and knowledge.

Our record in teaching foreign languages is infamous. The largest secondary school enrollment in modern foreign languages has never been above 27% (American Council on Education, 1975). Between 1970 and 1974 it dropped 12.8%. In the latter year, 11.9% of the enrollment was in Spanish, 6.9% in French, 2.8% in German, .3% in Italian, .1% in Russian, and only .25% in all other modern foreign languages. In higher education

our record is equally dismal. Not only are colleges and universities dropping the foreign language requirement for graduation, but our production of majors in foreign language is disgraceful for an international power. Commonly taught languages of Western Europe had numbers of majors similar to those in Spanish: 5,984 baccalaureates, 1,080 masters, and 176 doctorates. But for other vitally important languages, results followed the pattern of Arabic (10 baccalaureates, 7 masters, and 2 doctorates) or of African nonsemitic languages (2 baccalaureates, 6 masters, and no doctorates) (U.S. DHEW, 1976). The highest percent of total college enrollees in modern foreign languages since 1960 was 17% in 1963. By 1972, the figure had dropped to 10% (American Council on Education, 1975, p. 8). Even involvement in international-global catastrophes like the Vietnam War produced little effect. During that war, in 1970, there were only 18 persons studying Vietnamese in all American colleges and universities, and only 215 studying any Southeast Asian language (American Council on Education, 1975, p. 9).

Pennsylvania's Poor Performance

Pennsylvania shared in this decline. From 1965-66 to 1977-78, enrollment in modern foreign languages in the secondary schools decreased from 28% to 24% of the total enrollment, after having peaked at a high of 43% in 1968-69 (Pennsylvania Department of Education, 1978a). Yet, partly because of the Pennsylvania Code requirement cited earlier, the rate has now stabilized, so that if we compare the number of school districts, out of a total of 505, offering foreign languages in 1972-73

and 1977-78, we find that while French decreased from 450 to 411, Spanish increased from 402 to 450, German from 283 to 298, and Russian from 28 to 29. Italian is now taught in 26 school districts, but Chinese, Serbo-Croatian, Hebrew, and Portugese are each taught in only one district. The foreign language specialists in the Pennsylvania Department of Education report that Swahili is being taught. Five districts currently offer six foreign languages (Pennsylvania Department of Education, 1978a).

The present status of foreign languages in Pennsylvania's colleges and universities is revealed in a survey now being conducted by a project of the state education agency entitled EDGE (Encouraging the Development of Global Education). With 76 institutions of various types reporting as of the end of May 1979, 54 offer French, 40 German, and 52 Spanish, with a total of 46,374 students. Latin or Greek are offered by 17, Russian by 13, Italian by 5, Hebrew by 4, totaling 6,182 students. Only one institution offers Arabic -- to 47 students; two offer Chinese -- to 183; one offers Asiatic Indian -- to 9; two offer Japanese -- to 135; and one offers Slavic languages other than Russian -- to 257. The survey is still incomplete. It will also be interesting to watch the Toyota project of the Pennsylvania state-owned institutions under the Pennsylvania Consortium for International Education; the project seeks to encourage Japanese studies by use of self-instructional tapes, native informants, and the possibility of subsequent study in Japan.

Why, in a period of rapidly accelerating international involvement, has students' interest in foreign language continued to languish? In

part, it is because of America's continental expanse, rich resources, geographical isolation, and historic suspicion of lands from which our population has fled. A similar unawareness has been expressed in the ethnocentrism of our leadership -- at its worst during the McCarthy period but still evident in recurrent periods of isolationism -- and in the general failure of much American business to recognize opportunities in foreign markets, to say nothing of adapting marketing techniques to other cultures and mastering other languages. Our children's careers, which many see as the primary concern of schools, are viewed in terms of narrow local interest. We fail to realize our global interdependence with regard to resources, markets, and security. As a matter of fact, to what degree does this attitude mask our uneasiness about acknowledging the very existence of aliens, of realizing that one's own view of the world and its problems is not universally accepted? Since language is the medium of thought and shapes mental processes even as it implements them, many find it upsetting to substitute a new grammar, a new vocabulary, and a new culture for that to which we are accustomed.

When a sample of school principals in Pennsylvania were queried as to their interest in aspects of citizen education, respondents at all levels of instruction indicated that their first concern in a list of 16 items was "Community Members at School," second, "In-Service on Students' Social Development" (for elementary and junior high levels, but fifth in senior high, where "Family Life Education for Students" ranked second); but they placed "Global Education" as number 15 at the elementary level,

number 16 in junior high, and number 13 in senior high. In relevant activities, "Global Education" was thirteenth in elementary schools, eleventh in junior high, and ninth in senior high schools (Research for Better Schools, 1978). A questionnaire sent to secondary school superintendents in Western Pennsylvania elicited the response that interest in foreign language was declining for the following reasons:

a. College entrance requirement in FL [foreign language] abolished
b. Student feelings of irrelevancy of FL study
c. No longer required for a college degree
d. Lack of information with respect to the value of FL study
e. Teaching methods.

(DeFelippis, 1979, p. 143)

Perhaps the most trenchant finding was that 50% of the respondents felt that "the limitation of foreign language study only to those who elect it [would not be] detrimental to many capable students, and ultimately to the national interest" (p. 142). Yet one must consider inadequate the editorial preface to the article stating that "such findings suggest that efforts should be directed toward a reeducation of secondary school superintendents on the merits of foreign language study" (p. 139). Since these administrators reflect the values of the community they serve, it would seem also that the business and governmental leadership of the nation must become more aware of the significance of foreign language competence by analyzing their own needs. For example, when AAUW branches were surveyed on a similar questionnaire, the results were the same (Hanvey, 1979).

Perhaps now, however, the current is beginning to turn in favor of foreign languages. "A survey of 360 'Positions Available' advertisements

in The Wall Street Journal shows there is a demand in the business and commercial world for persons with business, technical, or scientific training who can speak one or more foreign languages" (Savell, 1978, p. 77). A study by the University of Michigan's Survey Research Center for the President's Commission discovered that over half of those queried "wished they could speak a second language," over three-quarters wanted foreign languages taught in elementary schools, 84% of parents with school-aged children encouraged them to study a foreign language, and 73% expected the young people to find a foreign language useful (Scully, 1979, p. 8). Many businesses (e.g., Piper Aircraft) have conducted special training sessions in foreign languages for their employees. In response to such a trend, Harvard University has restored foreign languages to its core curriculum, Eastern Michigan University has established a major in Business French ccupled with a minor in secretarial administration, and the Chamber of Commerce and Industry of Paris offers a Diploma of Commercial French (Muller, 1978, p. 398). Modern Language Association (MLA) recently found that the decline in foreign language study seems to be bottoming out (Scully, 1977, p. 1).

Need for New Perspectives

In the light of our present needs and attitudes, new perspectives on the teaching of foreign languages appear imperative.

First, the old "fashionable" languages will not meet current necessities. French, Spanish, German, and Italian must be taught not

only with reference to their home countries but also to their former or remaining colonies abroad. We must learn Russian and Japanese to deal with major world powers; Arabic to help cope with the oil crisis; and Chinese and African languages to open new markets and expand our knowledge of great cultures. Yet very few school districts in Pennsylvania are reported as teaching these languages.

Second, we must develop genuine linguistic competence. Gaarder says that "If foreign language study is to be humanistic as described . . . the teacher must be competent at level four (ability to use the language fluently and accurately on all levels normally pertinent to professional needs)" (cited in Carroll, 1967, p. 145). Gaarder (1976) maintains "the evidence shows that only in the most exceptional cases can our present regular system produce a teacher who meets the minimum standards set by the profession itself" (p. 153). The MLA Task Force on Institutional Language Policy recommends serious performance evaluation (MLA, 1978b). Its report states:

> The language teaching profession must work to improve articulation between levels of education and to establish performance critera and evaluation systems to aid in effecting transitions between levels. . . . There is a pressing need for students, faculty, administrators, and the public to know in more precise terms the basis upon which knowledge and competence in foreign language study will be determined and judged (pp. 3-4).

Otherwise we run the risk of redundancy, boredom, and poor motivation. The MLA Task Force on the Commonly Taught Languages, in its Recommendations 1 and 18, emphasizes that no standards have been generally accepted. We can refer to the MLA Proficiency Test, used in Pennsylvania

since 1960; to the new Educational Testing Service Language Proficiency Interview, which uses the measurement scale of the Foreign Service Institute to report the candidate's speaking skill; to the West German proficiency tests used in continuing education (Volkshochschulverband); or to the American use of "reduced redundancy testing (contextual dictations, noise tests, cloze tests)" (MLA, 1978a, p. 6). Further research is necessary.

Third, global education may seem to offer a cop-out for specific language competence, since it has often been described as being "non-ethnocentric," providing "global perspectives," aiming at "intercultural understanding," and dealing with "worldwide problems." Like the study of world cultures, it may seem opposed to detailed study and drill. But Matthew Arnold writes of the "higher provincialism" -- in-depth study which develops life-giving connections with other concepts and disciplines. It is in this approach that we can harmonize the two apparent polarities. A certain amount of concentrated study is essential to develop competence. However, if we never go beyond that, we run the risk of an ivory-tower retreat from reality, of lack of insight into even the culture that created the language. Hanvey (1979) points out that "across the country the most popular electives at the high school level are psychology, sociology and anthropology" (p. 18). When foreign language is properly taught, these concerns are mirrored in its semantics, demonstrated in its grammatical structures, dealt with in the reading material -- but they do require that attention be directed to them, that they be used to stimulate

such interests. The new teaching of foreign language requires both specificity and interdisciplinary dimensions. As in life, language may even assume a subordinate function while it aids understanding of other concerns. The global perspective is gained when we make a language a mirror to its culture, when it provides a model for learning other languages and new modes of viewing phenomena and problems.

The mutual necessity of the two polarities is dramatically expressed in the report of the American Council on Education (1975):

> International specialists and scholars are disturbingly absent in certain fields. In a larger sample of approximately 5,600 area experts surveyed in 1970, only 2.8% were in the field of education; 3.7% in applied professional fields; and 5/6% in all the various fields which make up the humanities apart from literature and history. More disturbing perhaps, less than one-third of this national cadre of "experts" was functionally fluent in any foreign language, while 20% possessed no language skills whatsoever.(p. 9)

Fourth, it becomes apparent therefore that foreign language teaching must become interdisciplinary. To its basic emphasis on linguistic competence, augmented by literature and what is loosely referred to as culture (involving some history, the arts, and social structure), it must add anthropology, religion, sociology, government, economics, and specific areas like ocean resources, population, food, marketing, law, and technology. Although foreign language teachers cannot become expert in all these areas, they must be sufficiently acquainted with them to work constructively with other specialists and to introduce new insights into their regular teaching. This requires in-service education and cooperation with other disciplines. Students need alternatives to

programs in language and literature. Departmental barriers should give way to cooperation, and teachers who participate in interdisciplinary arrangements should be specially rewarded (rather than penalized by lack of promotion and tenure) for work that does not fall exclusively within their "home" department.

Fifth, new strategies of instruction are essential for the new orientation and stimulation of interest. Hanvey (1979) cites the heavy attrition at the end of the first year of language instruction and attributes it to sterile, mechanical drill. On the other hand, he states, "those teachers and other educators (museum people, for example) who reported success with students emphasized the importance of 'hand-on' experiences: artifacts, simulations, field research projects" (p. 20). In describing a proposal for internationalizing education through satellites, a national committee refers to the principle that language is the key to culture , and plans to use television satellite transmission to bridge continents and assist "learning the colloquial language inductively within its cultural context" (Naff, 1978, p. 4).

Sixth, teachers need better preparation. Although over one thousand American institutions annually prepare a quarter-million teachers, only 5% are taking courses in international and intercultural subjects. At the second meeting of the President's Commission on Foreign Language and International Studies, these questions repeatedly arose, "Do language teachers have. . .

proper training in language, culture and techniques?
adequate in-service retraining?

ability to motivate students?
global perspective?
tests to measure competencies?" (Pourque, 1979, p. 5)

Foreign language teachers were recently assessed according to 39 criteria, and some useful guideposts for evaluation were enunciated (Moskowitz, 1976). It is apparent that greater linguistic competence, especially in colloquial fluency, is required. The teachers need better backgrounds not only in history, philosophy, and the arts but also in anthropology, sociology, economics, government, business, and the sciences in order to integrate practical aspects of the culture into their teaching. They need techniques that are motivational and experiential.

National and State Interest

The need for foreign languages has not gone unnoticed at federal and state levels. After Sputnik, the NDEA launched a drive to develop science, mathematics, and foreign languages; it proposed teacher training, in-service education, and development of materials and equipment. However, the drive was never funded at more than 20% of authorized levels. The 1966 International Education Act offered similar encouragement but was never funded. Most notable recently have been the Fulbright-Hays programs, NDEA Title VI, ESEA Title IX, and IREX. The Helsinki Accords of 1975 called for support for foreign language and international studies, and President Carter accordingly established a Commission, which is presently developing recommendations. Former U.S. Commissioner of Education Boyer recently organized as Task Force on Global Education.

Pennsylvania has long been interested in international education; its World Cultures courses were among the first in the nation, and it has required the teaching of at least two foreign languages in each school district since 1958. Paralleling the renewed attention to global education at the federal level, on May 12, 1978, the Pennsylvania Board of Education adopted the already cited policy statement in support of global education. The statement instructed the Department of Education to establish an advisory committee (now called EDGE), form a supporting network of lay experts, expand partnerships with other state education agencies to benefit students at home and abroad, strengthen curricula, and encourage educators to improve their own global understandings. EDGE recognizes that individual disciplines should be strengthened in support of the global thrust. Therefore, the Subcommittee on Teacher Certification endorses the 1968 foreign language requirements but suggests broadening them. They already include the "anthropological study of the foreign culture," phonetics, conversation, grammar, composition, linguistics, literature, social customs, history, geography, and civilization. Religion, economics, and the political system were added. The certification standards include the proficiency objectives of the MLA:

> a. ability to understand conversation at normal tempo, lectures and news broadcasts;
>
> b. ability to talk with a native with a command of vocabulary and syntax sufficient to express his thoughts in conversation at normal speed with reasonably good pronunciation;
>
> c. ability to read with immediate comprehension prose and verse of average difficulty and mature content; and

d. ability to write a simple "free composition," such as a letter or message, with clarity and correctness in vocabulary, idiom and syntax. (Pennsylvania Department of Education, 1978b, p. 23)

Other objectives include understanding of the sound system, forms, and structures; language as a manifestation of the culture; appreciation of the culture; knowledge of instructional techniques for modern foreign language as communication; and ability to use special techniques.

Other EDGE subcommittees are at work. One addressing the Role of the Foreign Student urges admission and utilization of foreign students. The Faculty/Teacher Exchange Subcommittee encourages listing of foreign students and retired faculty with international experience in a computerized inventory, and the use of graduate assistantships and tuition remission to promote exchanges and curriculum development. Another group, working with the state education agency, is making the above-cited survey, which includes the status of foreign languages at the state's institutions of higher education.

Recommendations

With these ongoing activities, it is essential that we establish some recommendations for concrete action on a variety of fronts.

Development of Public Awareness

1. Conferences and workshops for representatives of business, government, social, and educational agencies must be held on both global issues and problems and opportunities in specific regions, including characteristics of peoples.

2. Conferences and workshops on specific problems of developing relationships with another culture should be practical and brief, like that on Japan conducted in the summer of 1979 by the Pennsylvania Consortium for International Education.

3. Exchange-visitor assistance programs, like those of Rotary, Lions, and 4-H groups and Sister Cities, can help developing countries, demonstrate opportunities to Americans, and dramatize the usefulness of foreign language competence.

4. Exhibits and performances of the arts, as well as symposia and telecasts on social structure, philosophy, economics, resources, politics, and problems of other countries and cultures, should be funded and coordinated to reach the public.

5. Full publicity using all media should be given to both these events and to statements by leaders endorsing study of foreign languages.

Course Content

1. Study of less traditional foreign languages (e.g., Arabic, Bengali, Chinese, Hindi, Indonesian, Japanese, Portugese, Russian, Swahili, and Urdu needs to be introduced.

2. Such courses should be taught at centers that are carefully located for maximum outreach.

3. Interdisciplinary programs and courses will enrich the teaching of both foreign languages and other disciplines. Foreign language should be seen as a versatile tool.

4. Foreign language programs should provide alternatives to the typical language-literature majors in such areas as international law, government, and social welfare.

5. New courses and programs must be designed to examine the culture, history, and economics of countries where large populations speak the less commonly taught languages.

Improvement of Teacher Competence

1. Realistic teacher competency goals must be developed, accepted, enforced by accrediting agencies, and applied to the entire range of foreign language mastery.

2. Intensive foreign language study programs have proved most successful (Gaarder, 1976, p. 153) and can conveniently be held during summers for developing and maintaining competence.

3. Full competence can come only from living in the environment in which the language is spoken. Some competence can be developed in simulated situations in this country, but study will be truly effective, with the desired cultural and global implications, only in the native setting. We recommend study abroad and internships in foreign businesses, governments, and universities for at least a year, aided by multinational companies, governments, and service groups. Attempts should be made to involve at least two teachers from each school district and ultimately from each high school.

4. Foreign language must be used as the medium of instruction in all advanced courses and in study centers.

5. Summer workshops in effective instructional techniques should be funded.

6. A program of internships should bring well-trained specialists to small foreign language departments in colleges, universities, and high schools.

7. Interdisciplinary workshops should bring together language teachers and their colleagues from other disciplines to develop cooperative strategies and appropriate interdisciplinary units and materials.

Methods of Instruction

1. Realistic proficiency goals by stages should be established.

2. Foreign languages should be taught intensively rather than as one element in a daily hodgepodge of courses. New types of scheduling are therefore required.

3. Immersion in the foreign culture should be planned, including simulations, work with ethnic groups in the United States, and foreign study and internships. Low-cost fares and accommodations for these purposes should be established.

4. Foreign students and scholars used as native speakers should be specially selected, carefully trained, and adequately paid.

5. Self-instruction in the less commonly taught languages should be encouraged, using self-instructional tapes, laboratory manuals, and native speakers. Credit should be awarded for satisfactory accomplishment. However, regular classes in critical languages should be established as soon as practicable.

Materials

1. Specialists should work with teacher associations and researchers to develop effective instructional materials that not only stress foreign language acquisition but also demonstrate interdisciplinary approaches, are free from stereotypes, are contemporary in content, and emphasize global perspectives.

2. From among the vast amount of available print and nonprint materials, a careful examination should be made of those suitable for different levels of instruction and for a variety of disciplines.

3. Only after this analysis has been accomplished should new materials be developed.

Research

1. "Periodic surveys should be undertaken at each level of education to determine language-teacher preparation, work load, assignment, remuneration, and demographic identity, and to assess enrollments, curricular practices, and teaching methods" (MLA, 1978a, p. 5).

2. The usefulness of foreign languages for "developing basic linguistic and reasoning skills" should be definitively studied (MLA, 1978a, p. 5).

3. "Further research should be undertaken on all aspects of second-language acquisition," including the role of listening, use of bilingual texts, immersion programs, and characteristics of the effective teacher (MLA, 1978a, p. 6).

4. Measurements of proficiency should be developed (MLA, 1978a, p. 6).

5. Specific programs should be developed for demonstration and dissemination of the results of such research.

Conclusion

If these actions are taken, we shall go far in developing students into useful citizens of both the United States and the world. Every individual must perceive his/her involvement in a global society with global interdependencies. Each must have functional knowledge of global issues so that intelligent decisions can be made. Each should understand the common concerns of all humanity as well as the different solutions each culture has developed in consonance with its history, environment, customs, and problems. To achieve this, mastery of one or more foreign languages is essential. If the competence gained is not only linguistic but also cultural, it will have an important liberating function and demonstrate that the "proper study of mankind is man."

Chapter 8

GLOBAL EDUCATION: IMPLICATIONS FOR CURRICULUM AND SCHOOL ORGANIZATION

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This chapter will use a case-history approach to curricular implications of global education, particularly with regard to the school administration, structure, and climate. The focus will be on one middle school's experience in developing an organizational system that stressed the motivation of teachers and philosophical goals.

The focus will be on: (a) what changes were made, (b) why changes were made, and (c) how changes were made. In the final part of the paper, general principles and recommendations will be abstracted from the case-history study.

A primary emphasis of the paper is the conviction that the process of curriculum development is more important, or at least as important, as the product. While curriculum development must first deal with ideas, ideas alone are not enough to develop a global-education program in a school. It is also necessary to have a committed educational leader working with a group of caring, motivated teachers in an appropriate school environment.

What Was Changed

Keith Valley Middle School in Horsham, Pennsylvania, opened in 1972 as an eighth- and ninth-grade school. At that time, English (literature),

OVERVIEW OF INTERDISCIPLINARY CURRICULUM: NINTH GRADE

UNITS	SOCIAL STUDIES	ENGLISH	SCIENCE
Man as a Member of His Environment Man and His Economy	Geography: environment, map skills, adaptation, ecology, and interdependence. Economics: consumerism, comparative societies, investment, global interdependence and current issues.	Grammar and composition. Parts of speech, spelling, and vocabulary. Horror and suspense: Above Suspicion or And Then There Were None, Dracula.	Oceanography and meterorology: The study of oceans, weather, and their effects on mankind. Economic importance of the sea. Future development of ocean resources.
Man as a Group Member Man as a Member of Nation (optional)	Sociology, learning, values: family, marriage, and kinship. Families of man. Stereotyping and prejudice. Political geography: environment and culture.	English usage, composition. Raisin in the Sun or Patch of Blue, Romeo and Juliet or West Side Story.	Biology, bacteriology and ecology: The study of present life forms and their interrelationships. The study of human disease and its sociological impact.
Man and His Cultures Man and His Laws or Governments and Revolutions	Anthropology: culture, cultural universals, cultural pluralism, interdependence, global perspectives, and humankind. Political science and sociology: criminology, decisionmaking, trial procedures and citizenship.	Composition. Development of language, myths and legends. Drama as literary form. Arsenic and Old Lace, Lord of the Flies, Animal Farm or 1984. Tale of Two Cities.	Physical geography: Traditional methods of mineral and rock identification, plus the study of landform identification. Relationship between geography and cultural development.
Searching for Man's Past Man and His Future	Archeology and history: methods and sources, evolution, chronology, and the development of Western Civilizations. Futurism and sociology: life styles, prediction, cause and effect. Environmental limitations, change and adaptation, and global citizenship.	Research papers. On the Beach or Alas, Babylon, Fail Safe, The Future.	Paleontology and Astronomy: The study of past and future life. Development of the physical structure of the earth. The physical and biological development of man.

Figure 1. Overview of Interdisciplinary Curriculum: Ninth Grade

math, science (earth science and biology), health, physical education, music, typing, and the student electives (home economics, foreign language, industrial arts, and business) were taught as separate subjects. Starting 6 years ago with the drafting of an interdisciplinary curriculum, the program has changed to include 10 interdisciplinary units coordinating English, social studies, science, business, and music. Each unit is divided into key questions, concepts, and core performance objectives. Materials are listed for each unit, with the teachers using those materials they feel best meet the instructional objectives. Skills to be learned are indicated for each unit and often reinforced in both the English and social studies areas. A main objective of the interdisciplinary English-social studies curriculum is to study the world's cultures in a way that helps students understand the world and its peoples and their place in a global society. This interdisciplinary curriculum can be best described as an introduction to the social sciences.

A curriculum overview is shown in Figure 1. It should be noted that all concepts/ideas are not interrelated; each subject includes certain areas unique to the discipline and valid in and of themselves.

Two other interrelating areas, on a quarterly basis, are business and music. When the environment-economy units are being taught in the English-social studies curriculum, the business teacher works with each interdisciplinary team of teachers (primarily the English-social studies team) on such topics as fundamentals of credit, consumerism, inflation,

careers, and employment applications. The environment unit addresses the areas of designing an environmentally balanced community, the economic and environmental scope of the Alaskan Pipeline, and oil spills and their economic vs. environmental impact.

When the English-social studies program discusses the topic Man as a Group Member, the music teacher works with each team in exploring the music of the 20th century and how the individual and society in general react to music. All the interrelationships throughout the curriculum deal with the individual, the individual's world, and the real world.

Why Changes Were Made

The idea of teaching vs. learning must be considered when making any curriculum change. Once the staff decided that ideas and learning were more important than textbooks and teaching methods, it began to look for ways to make our curriculum more relevant to the middle school learner. First, relevant educational literature was reviewed, and many discussions were held about societal issues and the needs of the learners. The literature review and the discussions that followed revealed many new ideas and issues that could/should be dealt with in the classroom. The findings of Piaget, learning theorists, and others reinforced the validity of a ninth-grade curriculum stressing concepts, particularly as they relate to future issues of a global and interdependent society.

There was some anxiety at first about interdisciplinary programs. Teachers were apprehensive, but felt the risks were worth it if they

could show students the relationships across subject matter areas. A developing atmosphere of trust and responsible decision making also gave the teachers the confidence to try a new approach.

How Changes Were Made

In 1972 a rough 5-year plan was outlined that dealt with: (a) a philosophy of the middle school, (b) a team teaching structure, (c) a school environment of trust, (d) job descriptions for team and curriculum coordinators, (e) ways to provide relevant curriculum, (f) involvement of the community in the school, and (g) a formal evaluation system for the entire school.

Organizationally, one of the first changes was the establishment of interdisciplinary teams consisting of four teachers (math, science, social studies, and English) in the ninth grade, and five teachers (with the addition of foreign language for a cultures program) in the eighth grade. Approximately 100 students in the ninth grade and 125 students in the eighth grade provided a 25:1 student/teacher ratio in both grades. The interdisciplinary structure proved an excellent vehicle for team communication concerning student needs, both cognitive and affective.

Every team had time set aside each day for planning. The team coordinators' role was to direct and focus team decisions, although they were not to act as unilateral decision makers. The coordinators' function was crucial in working toward a school democratic decision-making model in which the staff were fully involved in both policy and curriculum decisions. It corroborated the finding that people will

support what they perceive as relevant and have had a hand in planning. The team coordinators' main responsiblities were to: (a) plan and schedule team activities and provide for classes according to administration guidelines, (b) focus interpersonal issues affecting team performance and the teachers' feelings of success, (c) conduct a daily team meeting and inform the administration of program problems and work out solutions to them, and (d) establish alternative educational programs within the team to meet special student needs. The team coordinators met weekly with the principal.

Another important decision was the use of block scheduling, with each team building its own schedule within parameters established by the administration. This scheduling flexibility gave teachers the responsibility to make decisions and to "control" the educational process within the team. Unlike many procedures, the teams could change their schedules on a-day-to-day basis, if necessary.

A curriculum coordinator's role in each department was also created. All curriculum decisions were made by departments in conjunction with the principal. Each department operated, at the beginning, with a single disciplinary curriculum and met on a needs basis with the principal. The curriculum coordinators' main responsiblities were to: (a) coordinate all learning activities with the goals of the school, (b) meet with new teachers for curriculum orientation, (c) coordinate budget needs with the administration, (d) recommend in-service programs to the administration as needed, (e) establish departmental goals for any

given year (goals were to be in writing, and mutually established with the principal), and (f) implement the curriculum evaluation process.

The principal was responsible for facilitating ideas, bringing consensus, and "pricking" the comfort zones of teachers as they examined curriculum and schooling. It was strongly felt that the autocratic "father" image of educational leadership was dead.

A key guiding consideration was the professional and personal needs of the teacher. Teacher needs--job satisfaction, motivation, responsible autonomy, etc.--were a paramount consideration. This orientation rested on the well-known theory and research of, for example, Boyan, Maslow, Herzberg, and McGregor.

Since goals are important to any organization, the middle school goals (philosophy) developed by the staff and administration cooperatively also played an important part. The philosophy includes cognitive and affective goals for both teachers and children. Basic skills and thinking skills are stressed. Among the important cognitive goals underlying the global perspective of the program were:

> Goal 8: to develop attitudes necessary to deal with the concerns of the future such as pollution, warfare, resource crisis, over-population and mental health;
>
> Goal 10: to understand the working of a democracy through direct student experiences in self-control and the responsibilities of citizenship;
>
> Goal 11: to provide experiences for students where they must learn to respect and tolerate the differences of others and individual achievement levels;

Goal 13: to have the youngsters understand the organization of academic disciplines as being interrelated: implied is the understanding that the organization of knowledge can be a tool for handling future problems. A combination of the academic disciplines should be used to get a total picture of the problem.

This philosophy provided the framework for all interdisciplinary curriculum development. All program decisions had to conform to one or several goal(s) and the philosophy was to be reflected in the total school program. Every department established goals each year, which were evaluated at the end of the year as to their effectiveness in establishing programs to meet the department goals. It was also important that everyone had the opportunity to challenge any aspect of the philosophy.

Instead of the English curriculum coordinator assuming the responsibility for eighth- and ninth-grade English, he or she assumed responsibility for eighth-grade English and social studies. The social studies coordinator assumed responsibility for ninth-grade English and social studies. This provided another structural commitment to the interdisciplinary curriculum.

Team coordinator, curriculum coordinator, and department meetings were held on a regular basis. After the first year, staff meetings were held to a minimum. Much information normally handled through staff meetings was disseminated via the coordinators, who served as liaison with the administration. Coordinators were selected by the principal, carried a full teaching load, and received extra pay for their added responsibilities.

Philosophical support and summer curriculum-writing funds were provided by the central office, which also provided the transportation, monies, and time for teachers to attend conferences crucial to an idea-oriented school program. The importance of central office and school board support for the programs, particularly for curriculum writing, cannot be overstressed. Mutual trust and rewarded motivation are part of a system of interactive mutual needs between school board and superintendent; superintendent and principal; principal and staff; and staff and students. Time was also allotted at school board meetings for curriculum presentations on a regular basis.

Support for curriculum development was exemplified during the writing of the cultures unit. Approximately 2 years ago, Robert Schell, Senior Program Adviser of the Social Studies Department, Pennsylvania Department of Education (PDE), presented the school staff with a PDE paper entitled "Integrated Approach to Global Education." The paper's stress on concepts and interdisciplinary curriculum helped in further conceptualizing the Keith Valley program and provided impetus for changing the cultures unit. Thereupon, the social studies department applied to the school district for curriculum money in the summer and members attended the PDE Executive Academy on Global Education held in connection with the Asia Society (two social studies and one reading teacher attending from Keith Valley). As a result of these last two activities, a new unit was written analyzing the concept of culture and developing an understanding of cross-cultural relationships, based largely

on the science of anthropology. Concepts such as cultural determinants, cultural universals, cultural pluralism, ethnocentrism, interdependence, and global perspective were components, along with a comparison of Japanese and American cultures.

The participation of parents was another important factor. A Parent Steering Committee, established early in the school's history, was made up of volunteer parents who went beyond the normal PTA function of providing services to the school. In time, as the new curriculum moved forward, the Committee also served as an ongoing vehicle for curriculum discussion, as a sounding board for ideas, and as a feedback system from the community. Parents were encouraged to volunteer ideas, both pro and con, to the Committee members as a check-and-balance evaluation system for the programs.

This parental involvement was particularly important, since new ideas in social studies from a global perspective may create controversy about what is appropriate for children to learn. Without a feedback system to community, far-Right or far-Left groups may force weakening constraints on an otherwise well-conceived curriculum. It should also be stressed that a program developed without staff participation is also vulnerable to group pressure; that is, if a program is "handed down" to teachers, it may be discarded as soon as a problem arises.

As the curriculum progressed, the role of the educational leader (principal) changed from that of stimulating ideas to supporting the development of instructional materials and determining procedures of

evaluation. During a program's developmental stages it is important to stress goals, ideas, change, and staff involvement. As the program matures the stress should move to effective instructional strategies for meeting program goals and, eventually, to evaluation systems. Important as "time on task" is for learning, it is equally important for the educational leader to keep teacher attention focused on task. As stated, school goals must be clearly defined at the beginning of each school year and followed up throughout the year.

With regard to formal evaluation, the overall evaluation paradigm established at the school is presented in Figure 2.

The Purdue Teacher Evaluation Scale provides a self-evaluation tool for teachers. The evaluation questionnaire is a survey of student interest in various school programs. The Stanford provides an achievement check against other schools throughout the nation. The department evaluation provides an organized way to check on curriculum growth, both strengths and weaknesses, and the annual results provide a basis for goal development the next year.

Each year over the 6 years the curriculum has been in effect, materials and program recommendations for change were based on the ongoing evaluation program and on the basic notion that effective curriculum development takes time and is cyclical. In other words, the ideas initially developed were not seen as static, and new ideas, teaching methods, and/or teaching materials were introduced periodically.

The summer curriculum-writing monies referred to were available

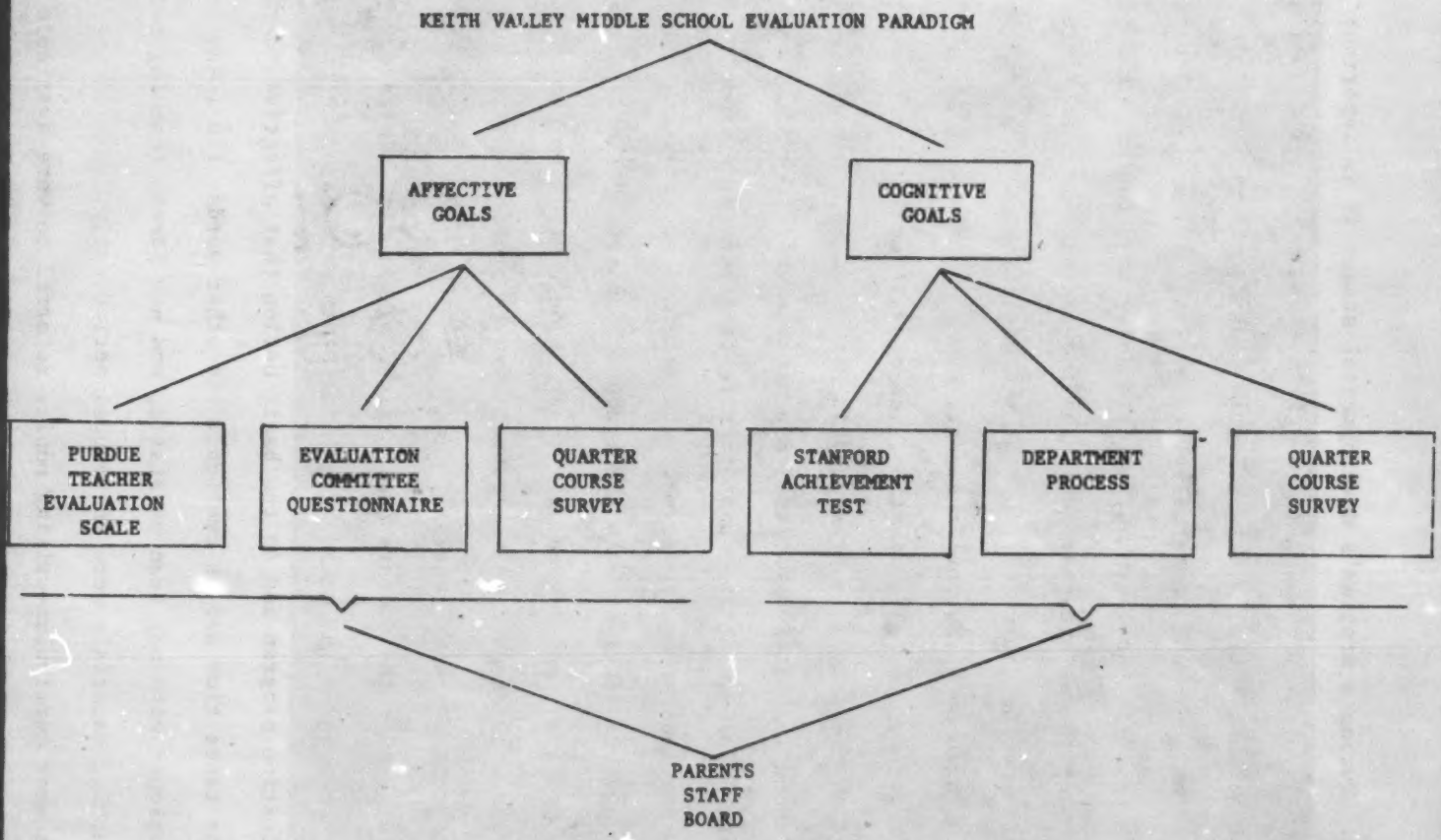

Figure 2. Evaluation process chart.

each summer on a needs basis and were used by the social studies, English, and reading departments for curriculum revision regularly over the years. Various members of the social studies-English and science departments have also been involved, thus increasing staff involvement.

The interdisciplinary approach, as well as its emphasis on global education, was not problem-free. Problems of timing, scheduling, and availability of materials arose, but the atmosphere in the school, the support from the administration (at all levels, including the apprehensive teacher), the team structure, and the use of curriculum coordinators made the program work.

Conclusion

The following were seen to be key elements in developing the interdisciplinary curriculum, and its global-education orientation, at Keith Valley Middle School.

1. There must be a democratic system of decision making involving all teachers with regard to philosophical and policy decisions, including a clear definition of limits. Psychological needs must be met to achieve a healthy organizational climate where teachers enjoy working and students enjoy learning.
2. The administrator must be involved as an enthusiastic participant in curriculum development. Support for the program must be more than superficial. Teachers do not take seriously those goals given only "lip service" by the administrator. Curriculum writing can be exciting and is the heart of a school program.

3. Both long- and short-term goals must be considered during any curriculum change. Whether a change is in the form of part of an existing curriculum or a total curriculum, a conscious plan of development must be formulated. The plan might include summer curriculum-writing; in-service time; consultant time; released time; and participation in conferences, seminars, or workshops.
4. Ideas should be more important than textbooks; learning should be more important than teaching. No two schools will develop the same program in the same way. Teachers should be encouraged to try new ideas in an atmosphere of trust and security.
5. Time should be provided for teachers to meet in teams during the day for curriculum discussions and/or planning. The time for curriculum development should not be after hours at the end of the school day.
6. As much flexibility as possible should be built into the schedule. Teachers should be able to vary methods and procedures on a day-to-day basis to meet instructional goals.
7. A community feedback system is extremely important, particularly as global-education ideas may be controversial to certain segments of the population. The school needs to know what works and what doesn't work from the community perspective. The administrator should have a system for getting this feedback.
8. The administrator should be familiar with the curriculum in district schools, so that there will be a smooth transition from grade to

grade in terms of subject matter articulation.

9. A formal system of objective evaluation of the entire school program should be formulated. Evaluation information should be shared with staff primarily, and with community, school board, and other administrative personnel where appropriate.

In this context, we should keep in mind what Bruner wrote:

> We may ask, as a criterion for any subject taught in primary school, whether, when fully developed, it is worth an adult's knowing, and whether having known it as a child makes a person a better adult. If the answer to both questions is negative or ambiguous, then the material is cluttering the curriculum. (Bruner, 1969, p. 52)

Finally, it is not always easy to arrive at consensus regarding curriculum. The degree of success is certainly inversely proportional to the size of the group involved. Each school district must work cooperatively with its state education agency to reach that consensus--in this case regarding global education. However, the development of curriculum and the process of teacher involvement should be joined together in planning for effective global-education programs in the future.

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Chapter 9

HEALTH AND NUTRITION CONCERNS IN GLOBAL EDUCATION

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A school program or curriculum stressing global concerns must give major attention to issues of health and nutrition. This paper is intended to provide educators with background information to assist them in preparing learning activities on global aspects of health and nutrition. The information may be used to stimulate discussion at virtually any academic level, but perhaps it might be most productive in secondary schools. Adequate preparation in geography and food production would make it applicable at intermediate levels. Additional readings and more intensive analysis of specific ecological zones would make the materials more appropriate for a postsecondary setting.

As a learning dynamic, it is suggested that the material serve as background for small-group discussions focusing on problem identification and problem solving. This may lead to greater individual learning in several courses -- for example, comparative geography or post-World War I history.

Major learning objectives might include:

1. The students will acquire an increased sensitivity to the sources of malnutrition and health problems in other countries.

2. The students will be able to relate U.S. policy to these prolems in other countries.

3. The students will be able to apply the principles discussed in this material to other major U.S. issues and to the problems of the other areas of the world.

4. The student will have a heightened awareness of the global integration of major issues, addressed through the specific study of a single issue.

Within the brief space permitted for the development of this topic, it is, of course, not possible to provide a comprehensive survey of all aspects of the global problems of hunger and ill health. Therefore a conscious decision was made to select certain aspects that would provide insights rarely encountered in the literature, and to provide case examples as starting points for analytic classroom discussions.

Health and Nutrition: A Global View

Julia, a 5-year-old girl living in a community outside of Philadelphia, has a cold; her mother has given her a warm bath and some soup. Lying in her bed, she listens while her mother reads a story. Soon her mother will call the doctor, who will recommend some medicine for Julia, which the pharmacy will deliver later in the day. Julia will stay in bed for several days and then return to her preschool class, her brief illness forgotten.

At this same time, Jeanette, a 5-year-old Haitian girl, also has a cold. Her mother has to go to market to sell some of her mangoes, and Jeanette stays in the family hut with her older sister. Jeanette's mother will buy some rice and beans with the money from her mangoes, but in the meantime there is no food for Jeannette and her sister. They sit in the hut watching the rain fall outside, clutching their thin, torn dresses

around them. Later in the day, their mother brings home a meager meal that barely satisfies their hunger. The next day, Jeannette's cold is worse and she also has diarrhea. Her mother has bought some milk from a neighbor, but she does not give any to Jeannette, as she feels this will make the diarrhea worse. The following day, Jeannette is weak and listless and has a persistent cough. The cough concerns Jeannette's mother particularly since her husband died of TB shortly after Jeannette was born. She walks several miles into the foothills of the mountains to visit the bocor, the healer who cared for Jeanette's father. The bocor agrees to set up a healing ceremony for Jeanette in two nights, but Jeanette's mother will have to give him several bottles of rum and enough money to pay him and his assistants. While she goes to her relatives to borrow money for the ceremony, Jeanette becomes more seriously sick. Her older sister is frightened and carries her to a government health post, a walk of 3 hours. They arrive to find the health post closed, and turn around to walk home. On the way home Jeannette dies in her sister's arms, a victim of dehydration, pneumonia, and malnutrition.

These cases provide a vivid contrast between the health-care problems of our country and those of the less developed world. A minor illness for Julia was not much more than an inconvenience and an opportunity for some additional attention; for Jeanette it was the first step in a process that led to her death. Poorly nourished in a very poor environment, Jeanette was not strong enough to resist the minor infection

of her cold combined with a diarrhea which led to rapid dehydration. Jeanette needed professional medical care, which was not available.

While the stories of Julia and Jeanette are somewhat of a caricature, they symbolize the gap in health and health resources, and food and nutrition resources, between the children of the developed countries and those living in the developing areas of the world.

Health

The most visible gap is in the area of health. Most children in the United States today do not have to worry about getting common communicable diseases such as polio, whooping cough, or diptheria, all of which caused a great deal of illness and death in our own country a generation ago. Because most children are themselves immunized, or at least a sufficient number to provide protection through "herd immunity," these illnesses are no longer major concerns. Other minor communicable diseases such as mumps and chicken pox are no more than transient discomforts for most children in the United States because of their good general health and nutrition.

The same is not true for the Jeanettes of the world in the Caribbean, Africa, Latin America, Southeast Asia, and elsewhere where immunization against childhood disease is not common. In such areas, mortality and disability from polio, typhoid, tuberculosis, measles, whooping cough, and other communicable diseases are high. Recent years have seen the eradication of smallpox, but one disease that had been fairly effectively controlled, malaria, has recently shown a dramatically

increased incidence in tropical areas.

Major efforts are expended by the developed countries, either individually or on a multinational basis, to assist the less developed countries in combating these common communicable diseases of childhood. Through major international agencies such as the World Health Organization (WHO) and its regional subunits like the Pan American Health Organization (PAHO), some major breakthroughs have been achieved, as in the case of smallpox and, earlier, yaws (tropical ulcers), but many world areas still do not have access to regular immunization programs.

Even as immunization efforts are being directed against these communicable diseases, the two most common and probably most lethal illnesses continue at the same, or perhaps even increasing, prevalence throughout the developing world. These are diarrhea and upper respiratory infections, neither of which may be effectively prevented through immunization. Both are accurately categorized as diseases of poverty. Diarrheas are usually brought on by poor sanitary practices, poor domestic hygiene, and infected water supplies; upper respiratory infections usually start in the monsoon-like rainy seasons and pass rapidly among family members in closed, damp houses. As the story of Julia shows, both diseases can be managed effectively with dry clothes, rest, good food, and appropriate medicine, but these are not available to the children of most of the developing world. Even in relatively well-developed Costa Rica, morbidity studies in one village indicated that most children were sick with either an upper respiratory or gastrointestinal infection during a total of

3 months each year. These children, sick one-quarter of the year with minor but weakening illnesses, were susceptible to more serious illnesses that would be rejected by a healthier child.

Perhaps more important, children who are sick, particularly with a gastrointestinal infection, either do not feel like eating or are not able to absorb the food they do eat. This leads to nutritional distress, which in turn reduces their capacity to resist the effects of infections. This synergistic cycle of illness and undernutrition contributes to a high mortality rate among children and to growth deficiencies among those children who survive the diseases.

The major danger in diarrhea is the dehydration that results, which brings on a systemic stress which neither infants nor small children can tolerate. Fluid replacement and retention is vital; in hospitals this is achieved intravenously, but such is not possible in the villages of the tropical world. Medical researchers have discovered that a solution of glucose and salts, given orally, can have a life-saving effect when other resources are absent. In recent years simple procedures have been developed to teach mothers in developing countries how to mix household products such as sugar and salt in a pop bottle filled with boiled water to make a rehydration fluid that will restore their child's electrolyte balance and start him or her on the way to recovery. An American biologist, who has dedicated most of his life to helping the Indians of northwest Mexico become self-sufficient in health and nutrition resources, has developed a homemade device that accurately

measures the correct amounts of sugar and salt to be mixed into a 12 oz. pop bottle. Children in several California school districts make these measuring spoons during recess and shop periods and send them to health programs throughout the developing world. In this way, they not only become increasingly sensitive to the health needs of children elsewhere in the world but also make a positive contribution toward improving those conditions.

Nutrition

Most of the world's population goes to bed hungry each night. Jeanette did, and this is the major difference between the story of her illness and Julia's; Julia did not, because of the relative affluence of her family and because of the technology of food production in the United States. In this country, despite the gradual spread of urban areas into formerly rural fringes, sufficient land is available to produce food not only for ourselves but also for the food needs of other countries. The balance between land and population is such that inefficiency or wasteful practices do not lead to critical shortages. One of the most vivid examples of this is the production of beef. One pound of vegetable protein, in the form of Midwest grains, is consumed by a cow in Kansas to produce the meat that goes into the famous "quarter-pounder" fast-food hamburger. This four-to-one ratio from raw resources to consumable beefsteak is either not consciously recognized or is merely accepted by American consumers. A combination of food tastes and purchasing power leads us to not seriously question the wisdom

of this approach to food production.

Farmers throughout the rest of the world would be incredulous at the space, the technology, and the production practices on American farms. Most surprising to them would be the amount of meat produced and consumed here. Throughout the rest of the world, meat is not a common part of most diets. (A Costa Rican joke tells of a teacher who asks her class for a definition of "carnivore"; one child answers: "rich people"). Problems of farm size (cattle need space to graze), frequent illness in animals, and marketing mechanisms make it difficult for most of the agricultural people of the world to obtain meat for their diets.

Nevertheless, throughout most of the world the primary deficiency in diets is not proteins. Most indigenous diets provide a mixture of legumes (such as beans) and pulses (grains such as wheat, corn, or millet) which, in combination, enrich the protein content of each to provide a diet that is sufficient for the protein needs of the people. The major deficiency, however, is in caloric intake. The current terminology for malnutrition syndromes, "protein-energy malnutrition" semantically underlines the result of calorie deficiencies. In adults, inadequate calories results in decreased labor output, which probably leads to decreased agricultural production -- creating a cycle of insufficiency. In children, caloric dietary deficits are compensated for by rerouting protein foods for metabolic purposes. This means that even though the diets of children may be analyzed as adequate in protein intake, the protein is diverted and hence not made available for growth

tissue repair, and resistance to infection. The result is increased illness and growth deficiencies such as stunting. Intervention (when available) for these clinical signs is usually in the form of a protein supplement such as dried skim milk. This extremely expensive intervention is most frequently misdirected, since the major dietary need is for increased calories, not increased protein. Research projects in Costa Rica and other Latin American countries have shown that local diets are usually adequate in terms of proteins but that the limiting factor is simply inadequate food availability, which leads to a caloric deficit. The most appropriate intervention, thus, is not the provision of foods from outside (especially those high in protein content), but rather the development of self-sufficiency in the production of traditional local foods. Some advances may be made through improved technology and seeds, but in many cases progress is restricted by shortages of land and increasing pressures on available land due to population expansion. Lasting changes in these areas will require both a redistribution of land to compensate for the extant inequitable patterns and the support of current trends in many areas to limit family size.

Important common problems encountered by farmers in developing countries, which their counterparts in this country no longer confront include adequate storage, credit, and marketing, all of which combine to limit food available to many agricultural families. Consider, for example, the problem your family would have trying to store a year's supply of food from the supermarket in your house. In addition to

dealing with the waste involved in packaging of food, you would run into problems of space no matter how large your house. Now consider the problems of a farmer in India who must harvest a year's supply of rice, vegetables, and other staples, and attempt to store it safely and conveniently. Unless great care is taken, the food will be eaten by predators, spoiled by molds, or stolen by less fortunate neighbors. For example, in Africa corn is stored hanging from palm trees, which are too slippery for rats to climb; in southeast Asia rice is stored in clay jars, which wick out moisture; and throughout the world ingenious methods are used to store family foods. However, these methods are usually insufficient or require more than the meager resources available to the truly poor. As a result, dietary intake follows a seasonal pattern, with relatively high consumption after harvest periods and with steadily decreasing rates during the year until the period of real shortage just prior to the harvest. In Haiti this pattern is so clear that health workers can predict the annual pattern of clinical malnutrition in an area. This enables them to intervene preventively where possible, and to plan for clinical services when preventive care is not effective.

The problem of storage leads to another common problem: credit. An Indonesian farmer who has consumed or lost his supply of rice several months prior to his next harvest must borrow cash or food from merchants in the market in order to survive until the next harvest. These loans are usually highly usurious and often require a repayment

in the form of food stuffs from the forthcoming harvest. As a result, the farmer has even less to store, and will have to borrow again in order to survive, until eventually he places his land in collateral for a loan. A poor harvest will forfeit his land, leaving the merchant with expanding holdings and leaving the farmer both landless and unemployed. Most banks in developing (or developed) countries do not rate small farmers as good enough risks to justify the effort of administering a loan, and therefore concentrate their risk capital on large landowners and agricultural businesses. In many parts of the world, farming cooperatives have emerged to address this need by providing a revolving credit fund among their members. However, since membership in a cooperative usually requires ownership of at least some agriculturally productive land, this does not answer the needs of the landless or truly poor farmers.

Marketing, which involves both the purchase and sales of foodstuffs, represents another major problem throughout the world. Fishermen in Kisambweni, a Kenyan village facing the Indian Ocean, face great risks fishing offshore in small boats. They sell their catch to merchants in the village, who ship the fish through a regional market, where it is resold to Mombasa or eventually inland to the capital, Nairobi. Along the way, the price of the fish increases tenfold, with a majority of the profits going to the middlemen who serve as brokers as the fish pass from the fishnet to the shopping bag. Of all of the individuals in the marketing chain, the fishermen enjoy the lowest profit margin. As

with credit, marketing cooperatives are becoming more common in developing areas, but they do not remove the gross inequities in the marketing system. A similar process functions in reverse in the purchase of foodstuffs. Even an efficient small farm cannot produce all that a family might need or want to consume, so members of the family walk to town to purchase staples such as salt, sugar, or flour, and luxuries such as meat or vegetables from other geographic areas. At each step from the factory to the rural market where that family shops, the prices of the items increase, representing a further drain on domestic resources. Even well-meaning improvements in marketing do not always benefit small farmers in rural areas. Improved roads and municipal markets in Haiti, for example, have merely increased the flow of foodstuffs from rural areas to the more profitable urban markets.

The combination of a lack of storage areas, lack of access to credit resources, and inequitable marketing practices places small farmers in the developing world in a cycle of increasing dependence and decreasing availability of food. These factors, rarely considered when we look at the problems of developing areas, are as relevant, if not more so, as the factors more commonly identified -- such as ignorance and inefficient technologies. In fact, many no longer consider these latter to be major components of the causes of underdevelopment. While a Peruvian farmer may not be well educated, he requires wisdom to survive in the harsh environment of the altiplano. Similarly, his technology of food production may appear primitive, but probably it is appropriately

adaptive to the ecological conditions under which he lives and works. Few Americans care to recall that the agricultural potential of the western prairies was destroyed by the disk harrow, a technological breakthrough that was inappropriately applied. A farmer on Taiwan, with simple technology and careful planning, can produce his family's food needs on a plot of land not much larger than an American vegetable garden. The key appears to be to adapt technology to the environment rather than to dominate it.

The Role of Developing Countries

During the past half-century, there has been an increasing tendency on the part of developed parts of the world to see the health and nutrition problems of the poorer countries as their own. To a certain extent, this may be seen as enlightened self-interest. For instance, the shrinking world means that a communicable disease in Africa may pass rapidly to France and the rest of Europe, making it clear that health problems can no longer be isolated or confined at their origins. The United States draws upon its generosity, and occasionally its conscience, to attempt to redress some of the inequitable distribution of food resources in the world. Foods produced in excess of our needs are processed and distributed to needy areas, reducing the effects of famine and nutritional deficiency. This distribution (most of which is conducted under the provisions of Public Law 480) is not wholly altruistic, since it also supports domestic farm price-support policies. The program, translated into action through the distribution of bags of corn,

soy, and milk blends to needy families, has both beneficial and detrimental aspects. On the positive side, the food can save children from death or a growth deficiency due to malnutrition; the logic of food distribution in, for example, drought-stricken Chad or in famines in India cannot be questioned. On the negative side, however, the general policy of distributing excess foods has recently been questioned by nutritionists and community development experts. Giving surplus food away to families in Bangladesh during a crisis will save lives; but continuing to do so after the crisis has passed may contribute to continuing dependency, with the farmer anticipating such a subsidy and thus slackening efforts to develop his own self-sufficiency.

In addition to giving away large amounts of food, the United States and other developed countries market commercial foods in less developed countries. Supported by generous advertising budgets, these food products are introduced into underdeveloped market areas and offer the lure of "modernity." Many foods with less nutritional benefits than traditionally available foods enter the diets of the people of poorer countries this way. Most often, this represents the replacement of beneficial foods by less beneficial foods. With increasing frequency, however, there are tragic results. One of the most active market areas is that of commercial baby formulas, which are sold aggressively throughout the world. Poor urban or rural women, who want to appear modern or to free themselves from the restrictions of breast-feeding, purchase these formulas. Frequently, due to local conditions and ignorance, the formulas are not properly prepared, overdiluted, mixed with unboiled

water, put into unsanitary vessels, and unrefrigerated. They thus provide an actual hazard to the infant, leading to undernutrition, gastrointestinal infections, and intestinal parasites. Fruit and other such preparations, in which the cost of the jar, label, and advertising far surpass that of the food itself, replace less costly and more available local fruit and foods. This pattern of consumption, identified in India among middle-class families, has been labeled "sociogenic malnutrition"; that is, adequate traditional diets are replaced by maladaptive commercial diets, encouraged by advertising that exploits the desire of consumers to be "progressive" and "modern."

The United States also exports, in addition to foodstuffs, the technology of American agribusinesses and scientific approaches to food production. The much-heralded "Green Revolution" of the 1960s and 1970s brought dramatic increases in the production of foodstuffs common to the developing world. IR-8, developed with American technological assistance in the Philippines, and high-lysine corn, developed in Mexico, are two examples of the successes of applied technological research. While there can be dramatic improvements in yields and nutrients, they are not without costs. One cost is the need for chemical fertilizers not available to many rural farmers; another is the fragility of hybrids; and still another is the need for extensive land areas and expensive equipment. A final problem is that of taste and texture; the "new" foods often come in colors, textures, and flavors unfamiliar and unacceptable to consumers. After the public acclaim that met the

products of the Green Revolution, a calmer analysis led to an understanding that many of its breakthroughs cannot solve the basic problems of much of the world's poor, whose needs for land far exceed their needs for new technology.

In the post-Green Revolution era, an increasing tendency has been noted to concentrate on the needs of the small farmer, who does not have access to the equipment, fertilizers, and chemicals that the new foods require. The United States Agency for International Development (AID), has recently developed an office to deal with appropriate technology, and has established a general policy direction emphasizing health and agricultural improvements at the family and community level. Such efforts are harder to measure and far less dramatic than a new strain of rice with a quadrupled yield, but they will have a lasting beneficial effect. New initiatives focus on support programs for banks that provide low-interest loans for small farmers, social development programs that emphasize institution-building at the community level in the form of community development committees and cooperatives, and the preparation of agricultural extension agents with special training in subsistence rather than commercial agricultural production.

At the risk of appearing to participate in an exercise of self-flagellation, at least one other issue should be confronted in looking at food resources in a global perspective: the role of the United States in a global food market. While we export some of our excess food production, we are a net importer of food in terms of cash value. If you live in Wisconsin and trudge through the snow in January to your supermarket to buy some tomatoes, you probably do not reflect on that

anomaly -- that the tomatoes you buy were grown in northern Mexico, probably on a farm owned by a subsidiary of a major American corporation. Similarly, large banana plantations in Central America are dedicated to the production of a luxury food item, with very limited nutritional value, for consumers in the United States and Europe. Much of the beef consumed in this country is imported from large farms in Argentina and Costa Rica dedicated to this exportable production, while much of the rest of the country is faced with increasing pressure for agricultural land. Small wonder that the rural poor in these areas become politically active, frequently violently so, and often express their anger at the developed countries, whose desires they see themselves subsidizing at the cost of their own needs.

A truly global perspective on nutrition underlines some realities that are sometimes difficult to accept. These include an awareness that our habits and practices are not always adaptive to the resources in our own country, and frequently also affect the resources in other countries. A coffee farm in Brazil and a sugar plantation in the Dominican Republic represent agricultural resources used to produce desired, but not essential, foodstuffs in an overfed American society. At the same time, the farm and the plantation divert agricultural resources from the production of foods that would insure local self-sufficiency. The concept of the Global Farm, in which food is produced and follows a free market, has far more benefits for the developed than for the underdeveloped world and actually serves to widen the gap between their relative access to needed resources.

Julia and Jeanette, who started this paper, never met each other, but their stories are tied together almost as closely as they themselves were to their respective families. There is no reason for Julia to feel personally responsible for the tragedy of Jeanette's illness; it would do no good to attempt to assign guilt so widely and at such a distance. There is some benefit, however, in reflecting on the extent to which the lives of these two girls are linked, in ways that neither imagined. Such reflection might lead to an awareness of the extent to which unconscious patterns of consumption can trace back to negatively affect others in another country. It was not only luck that made Julia's life so different from Jeannette's; it was also choice and purposive action. With similar choice and action, at least some steps can be taken to redress the inequities that led to that difference and to try to prevent the perpetual recurrence of Jeanette's tragedy.

Conclusion

The foregoing discussion is intended to provide the educator or curriculum planner with a distinctive perspective on a global problem. In its entirety or in selected portions, the aim is to provide the background for analytic discussions of the integration of major global issues. While the discussion is confined to health and nutrition, the principles involved carry far beyond those topics. Similarly, the case examples are often drawn from personal sources and experiences; undoubtedly, they will stimulate educators to generate similar case

situations dealing with other geographical areas, both national and global. Ideally, this material will be integrated with other curriculum material which stresses our national role in international concerns, and the place of the individual regarding issues of concern to all of the world's population.

Chapter 10

A CONSIDERATION OF THE GLOBAL PERSPECTIVES OF SOCIAL STUDIES

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So that this consideration may be marked with wisdom rather than passionate advocacy, it would seem proper to define some terms. There are two in the title that have many meanings: social studies and global perspectives. In our definition of social studies we shall look at some of its characteristics and examine its purpose. The other definition will consider two meanings of global education.

Then we shall bring these two definitions together into a proposal for placing social studies in a global perspective.

Social Studies

Characteristics of the Social Studies as a School Subject

Social studies is the arena, in the formal schooling, where humans can study their own existence. In the elementary and secondary schools social studies deals with the behavior of humans as a group and as individuals in their relationships with their physical environment, their physical resources, their institutions, their culture, their governance, their heritage, and finally, their selves.

The knowledge for these studies comes from the behavioral and social sciences of geography, economics, sociology, anthropology, political science, and psychology as well as from humanistic studies of history, literature, and art.

As is the case with many other curricular areas, the social studies has been going through changes. Something called the New Social Studies

has emerged. Regardless of how they are organized, the new programs have the following characteristics:

-- use of inquiry, discovery, and other investigative procedures

-- materials and strategies designed to teach the modes and processes of social scientists by using new social data.

-- relationships among concepts, principles and generalizations which form the structure of knowledge and integrate the social science disciplines.

-- procedures and materials designed for a conscious examination of values

-- innovative teaching strategies such as behavioral objectives, multimedia presentations, games and/or simulation activities, case studies, and individualized activities.

This new approach may be attractive and rewarding but it also has its problems; some subtle, some apparent. Among these are four which must be recognized and dealt with.

The characteristics given above show an approach to knowledge and teaching which is dual though not mutually exclusive: social studies takes a behavioral science approach where the focus is on the gathering of evidence for substantiation of propositions. In a sense, "right" is provable with this method. On the other hand, it also encompasses a humanistic approach where the focus is on the values that humans, as groups and as individuals, live by. In these value choices provability diminishes.

A second problem is that the teacher must draw on all of the social sciences, and there is a burden on the teacher to integrate these disciplines within the approaches selected.

The third problem is that the subject focuses on group behavior as well as individual behavior. The social scientist can show that 90% of the people behave in a certain way under certain conditions. But they can't say which 90% or, more importantly, whether or not people should behave in that way.

Finally, the social studies deals with human beings and their society. It calls for an examination of much that is tender and held to be dear. The path is not an easy one as emotions and controversy color sweet reason.

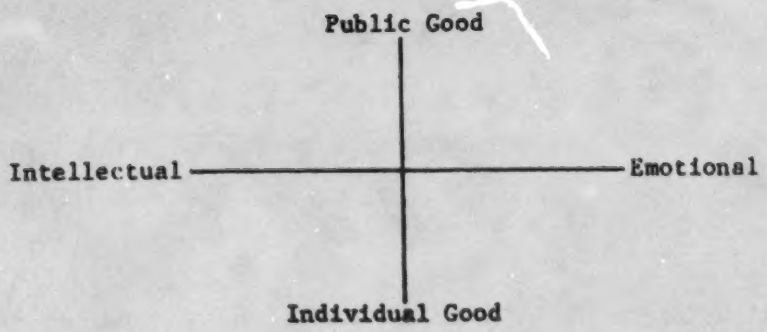
The Purpose of the Social Studies as a School Subject

Humans wonder at their own existence, and this wonder leads to the knowledge that humans live alone in the sea of humanity as well as living as a part of the sea of humanity. One of the postulates that humans live by is summed up in the Roman phrase pro bonum publico, for the public good. Another postulate held is that individuals and their rights are the summum bonum, the highest good.

Modern humans find themselves caught between these poles; they are free to decide and yet are constrained in their decisions.

Thus we weave our tortured way to the purpose of teaching and learning social studies: a major purpose is to explore the fourth R in education -- rationality, which can be defined as making decisions without panic.

Again some definitions: panic in this sense means the stasis of indecision, a situation which invites others to decide. The rationality of decision making comes from a rule of reason -- finding a balance between extremes. These extremes can be graphically represented by a cross:



The vertical axis represents the idea expressed above -- the two forces of the individual good and common good. The horizontal axis represents a basic quality of human nature -- an intellectual side and an emotional side. The highest quality decision would be at the intersection of these two axes.

So, then, the purpose of social studies: to provide the environment wherein the learner can learn the skill and art of making high quality decisions.

Global Education

"Human history becomes more and more a race between education and catastrophe." (H. G. Wells, The Outline of History)

Our thesis is simple. Education is the transmission of civilization so that we can win the race against catastrophe. It is the transmission of civilization so that we can avert the tragedy of ignorance of our fate as citizens of the world. Thus it follows as night the day that education is global.

Global education views the earth as a whole. Global education views the world of humans as a vast interlocking system. The global view is opposite of the isolated, narrow view. The global view recognizes that there is no place to hide in a world of instant communication and constant change.

There is another sense to this expression. The word "global" can also mean all-encompassing. In this sense global education is the opposite of parochial. It views the world of knowledge as a seamless web. It takes into account everything in its search for balance and quality.

Global education in both senses is a necessary reminder to humans of their humanity — its agony and its ecstasy.

Cultural Analysis

"The life which is unexamined is not worth living." (Socrates, Apology)

How can we bring a truly global perspective with all of its breadth and complexity to the social studies with all its breadth and complexity?

We can begin by providing an environment for the students to have a worthy life by examining with care and diligence the lives of others. This can be done by introducing a process which can be called cultural analysis.

Cultural analysis is a process drawn from ethnographic studies designed to allow a person to describe, with a degree of precision, how people behave in cultural settings -- local, national and international -- wherever there are cultures. At this point, again, a few definitions are in order.

The word "culture" has many connotations: one is the anthropological definition of a group of people living together; another, behaviors that people have who live together. Still another definition is a high degree of rather esoteric learnings (he is a cultured man). Of course, culture is also defined in regard to the arts, crafts, literature, theater, music; the daily paper lists the cultural activities of the day.

So, in order to be more precise at this point, let us use the word "ethos" in place of culture. Now we shall speak of the ethos -- meaning the spirit of a group of people who live together and who follow similar customs, traditions, and patterns of behavior. The ethos of a people is their characteristic spirit which comes from their accustomed ways of interacting with their world.

As we look at these behavioral patterns, we find certain universal concepts emerging which can be called the components of the ethos. These components are an organized series of concepts which can classify the behavior of any cultural group.

In any culture humans operate in three realms: concrete, human, and abstract. Each of these realms has different dimensions. In the concrete world, there is the spatial dimension and the material dimension. In the human world, there are the external dimension (relation with others) and the internal dimension of the self. In the abstract world, there are four dimensions -- temporal, ideational, aesthetic and spiritual.

The conceptual framework of the cultural analysis process is shown graphically in Figure 1 on p. 182. Let us now look at the elements in detail.

Concrete realm. Humans behave in a spatial dimension and divide space into territories they can manage, as groups and as individuals. They spend much effort and material in defining and defending the boundaries of that territory. As an example, it has been noted that the predominant American culture pattern defines personal space in an unusual way. Persons seem to live in an envelope of space, occasionally penetrating it as they shake hands. The extent of the feeling about space is measured by the fact that we apologize for bumping into someone -- we've violated that envelope of space.

The material dimension of the concrete realm deals with the resources which humans use in their lives. This dimension of the American ethos is based on an abundance of material goods to the degree that yesterday's luxuries are today's necessities. The cultural norm is that of acquisition as more and more people try to possess more and more goods. With the proliferation of products comes the demands, real or imagined, dictated by fads and fashions. Needs and wants become confused; choice becomes more difficult.

Human realm. Any culture has a tangled web of human relationships making up the external dimension of the human realm. Any social organization from the most simple and primitive society to the most complex civilization is built on the premise that no man is an island living unto himself alone. Behaviors are learned in order to lubricate the frictions of social life.

The American society, with its political dedication to individual freedom, is constantly wrestling with the problem of finding an equilibrium between that freedom and the common good.

Children operate in this external dimension of the human realm as they begin to assume the roles defined for them by society and its institutions -- sex roles and sibling roles are but two which come to mind.

There is an internal dimension to this realm, also. In the interplay between the individual and the group, which is a hallmark of modern living, the individual is called upon to play many roles. These roles place many complications in the way of personal identification -- resulting in the age-old question, "Who am I?"

Children operate in the internal dimension when they first perceive themselves as persons, see their effect on other persons, and begin to perceive the differences in themselves brought about by the gusts of feelings and emotions.

Abstract realm. The human mind is blessed -- or cursed -- with the ability to deal with abstractions: mental constructions organized by a process which, like the traces of an electron, are visible only by their product. This highly sophisticated mental process, poorly understood at best, we call thinking. The whole idea of ideas is vastly abstract; it is difficult to think about thinking. It is doubly difficult to describe the idea of thought. But we shall plunge ahead -- "else what's a heaven for?" This realm has four dimensions. A temporal dimension explores the rhythms and schedules by which humans live. An ideational

dimension provides descriptions of the language, the methods of acculturation and ways in which a culture explains the world. The search for beauty is examined in the aesthetic dimension of this realm. Finally, the expressions of faith are explored in a spiritual dimension.

Spatial dimension. There are three key organizing concepts drawn from the field of geography. The first is the concept of location, where things are physically located on the globe or within the physical environment. The second organizing concept is the idea of environment -- the total surroundings of an individual and groups of individuals. These environments can be better understood by grouping the characteristics around the subconcepts of landscape, region, and system. The third organizing concept is that of interaction within the environment. The interaction is addressed in use of personal space or territoriality.

The material dimension. The relations of humans and the material world are described as the sum of the decisions made by individuals and groups as they attempt to satisfy an infinite number of wants with finite resources. Elucidation of this dimension involves a chain of key concepts, the first of which is scarcity. Scarcity in this sense means that there is a finite limit to the amount of material resources; it is not the opposite of plenty. The next concept is production, creating goods and to satisfy the human wants. Production, in turn, involves the concept of the goods and services because they are the products created to satisfy the wants. This links to the concept of consumption -- the use of the goods and services which are produced to satisfy the wants.

Further along this interwoven chain of organizing concepts emerges the concept of interdependence, for the production of goods and services demands on the part of the populace an ability to work together because no one can do it all. Two other key concepts emerge in the chain: the concept of exchange and the circular flow of income.

External dimensions to the human realm. Within the human realm are behaviors by individuals and groups resulting from the interaction with other individuals and groups. These form, again, a chain of certain key organizing concepts. The role of the individual is a concept which leads to that of institution -- formally organized groups of individuals which in many ways determine the roles for those individuals. This concept naturally leads to a discussion of the process by which the roles that individuals fulfill in society are defined -- the concept of socialization. The quality of the role performance is determined by the norms -- the accepted patterns of behavior which are defined for the individual. These patterns are defined for the individual as he/she functions in institutionalized roles after socialization. Arising at this point is the concept of sanction -- the penalties inflicted upon the individual who has not functioned according to the general norm. Next is the concept of power, the right or privilege of exercising control over others. Extending from this power is the final concept of legitimacy, meaning the acceptability of the power used for sanction or control of the normal definitions of the roles that people play in institutions.

Internal dimension of the human realm. This dimension deals with the relation with one's self, with one's own personal view -- with the

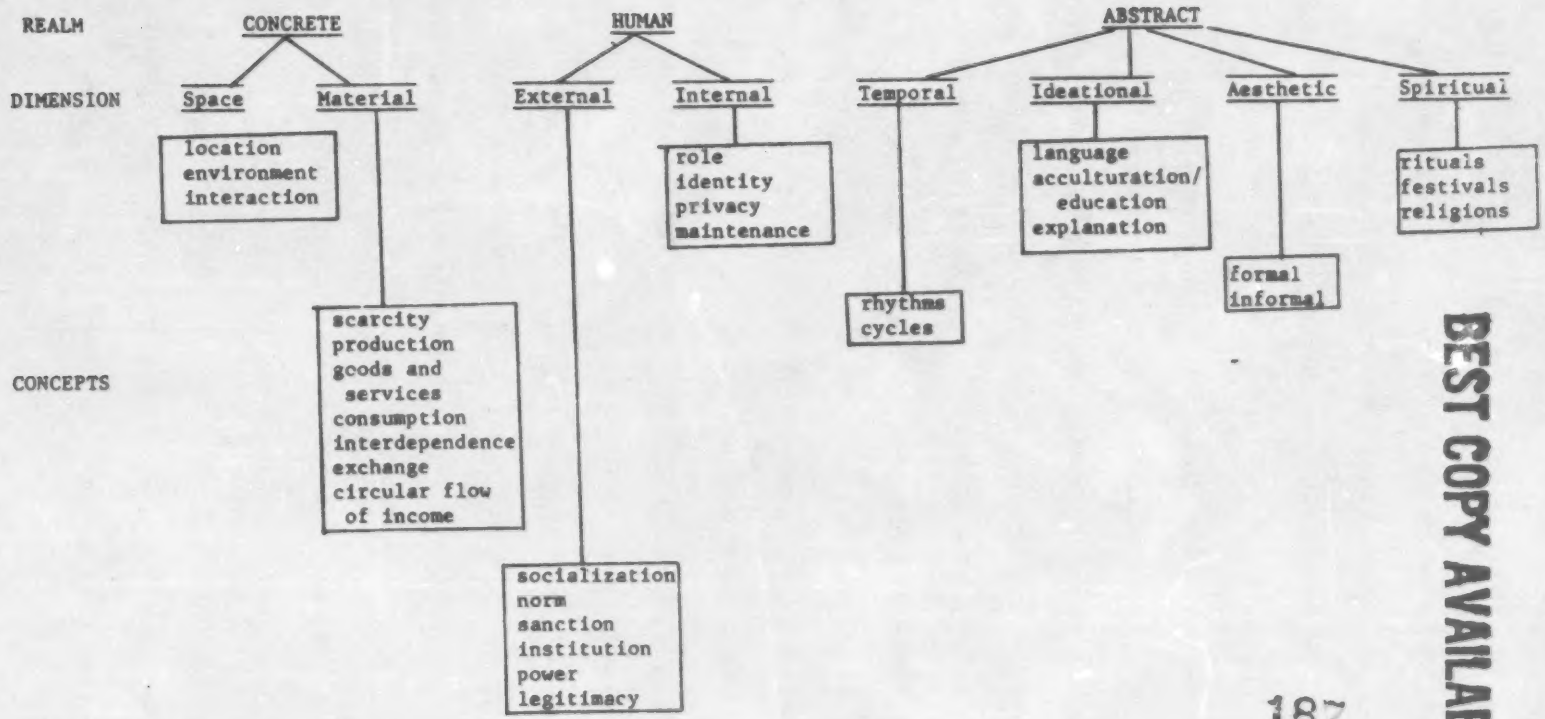
way in which one is unique. The organizing concepts in this dimension are fewer but no less important than in the others. The primary concept is identity -- the ability to see one's self as a separate, unique individual; metaphorically, this is the process of holding a mirror to one's self to see what is in that mirror. An extension of this idea is the concept of privacy which is, in a sense, the internalization of one's identity, revealing it as one chooses. Identity has a quality which may be called maintenance -- the control of an individual over his/her mental and physical self so that a state of well-being is established.

The temporal dimension of the abstract realm. The human measures time and time, in turn, measures the human, as life proceeds in rhythms and cycles. But the measures differ from culture to culture resulting in different rhythms and schedules.

The ideational dimension. Humans have the marvelous capacity to construct and communicate ideas beyond palpable realities. The ideas are expressed in language which differs from culture to culture and within cultures. The language in turn becomes a medium for the way in which the cultural heritage is continued through generations in the institutions of acculturation/education. This heritage is a determining factor in the ways in which people explain their world -- using superstitions, myths or perhaps some rational logic.

The aesthetic dimensions of the abstract realm. Humans abstract ideas from immediate reality and aspire to some heights of experience greater than that reality, defining these heights as beauty. The formal

Figure 1.



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aesthetic aspirations are expressed in the plastic arts, literature, and the performing arts. In a less disciplined, more spontaneous way humans have an informal expression through their own participation in leisure time activities which we have learned to call recreational.

The spiritual dimension. The last of these seven dimensions is the most complex and least describable of them all. Probing the recesses of faith means we have to deal with the paradox of expressing the inexpressible. We can, however, analyze and describe some manifestations of that faith in some of the rituals, festivals and religions.

These ideas are shown graphically on the following page.

Use of this model

Coming down from the clouds of theory to the hard ground of practicality, we can urge the use of the cultural analysis process to accomplish the following tasks.

Organize the study of any culture -- local, national, or international. Too often the study of other cultures emphasizes the unique and unusual -- Japanese bow always and eat with sticks. Too often the study of other cultures reinforces stereotypes -- the Mexican taking a siesta nap, leaning against a cactus with his sombrero pulled over his eyes, while his burro grazes nearby. Use of this model ameliorates these difficulties. The model provides several descriptors which, when duly and properly expanded, offer a complete description of a culture. This complete picture goes beyond the unique and the entertaining. By presenting an accurate description of the behaviors of the people in the culture, sterectypes are avoided.

- Provide an understanding of the social sciences and history.

The descriptors in the model are concepts. They provide the building blocks for the structure and knowledge. As such they can become vehicles for analysis. The social studies course can, in its pursuit of a global perspective, take the students beyond the "who" and "what" to the "how" and "why." And it is hoped that they may get to the most important of all: "therefore what."

- Organize a whole social studies curriculum. The model provides a means by which students can obtain a global view of social studies and have a perspective on the world in total.

The global view of the social studies comes from the integration of concepts from the social sciences and into the total structure. Concepts about the spatial dimension of cultures come from geography, and the material dimension concepts are drawn from economics. Sociology, political science, psychology, and anthropology provide concepts for the human dimensions. The concepts in the dimensions of the abstract realm are drawn from humanistic studies. The whole structure has a perspective that only history can give.

The global view of the world would come from the examination of many cultures.

So the cultures of the world become the subject of study to obtain a global perspective, in both senses of that term, for the social studies.

Summary

What is being proposed here is straightforward. The social studies is, in and of itself, global in both senses of the word. It views a whole world by examining the patterns of behavior of individuals and groups in other cultures and other times as well as in our own. It is all-encompassing in its perspective; it is interdisciplinary in its use of concepts from many disciplines to understand the seamless web which is the knowledge of human behavior.

This is the "what," the "how," and the "why." There remains the growing "therefore what?" The students in the class are also participants in a culture. By providing these with global knowledge, we are providing them a view of alternatives. By providing them with a method of analysis, we are providing a sense of rationality as the students make rational decisions -- decisions without panic which go beyond the narcissistic and hedonistic to an enhancing of the quality of life, their own and their group.

Global education? It is the only way to answer the questions of our time:

"If I am not for myself, who will be?
Yet, if I am for myself only, what am I?"

Chapter 11

MATHEMATICS, A VEHICLE FOR INCREASING GLOBAL AWARENESS

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Mathematics may be said to be an international language and, indeed, this would seem to be true. The symbols and operations of the subject are the same throughout the world. Even though some peoples use an indigenous or popular numeration system in their daily transactions, in general, mathematics, as it is formally taught in school systems, universally employs the symbols of the Hindu-Arabic number system and the same algorithms or rules for performing addition, subtraction, multiplication and division. Secondary school students--whether in Ghana, Chile, Poland or the United States--study the same properties of triangles, learn how to use logarithms, and find the sine of a 30° angle to be .5000. We all perceive and quantify the world around us in a similar manner. This commonality can readily lend itself as a vehicle for achieving mutual understanding, an understanding of ourselves and our society in relation to other societies. More importantly, it can also help in developing an appreciation of our participation in the human family. This potential of mathematics as a channel of human understanding across cultural and national boundaries and as a clarifier of the problems that face humanity cannot be ignored. Global perspectives in mathematics teaching attract student interest and supply a much needed relevance for our times.

Mathematics, a Unifier of Human Experience

There is a small clay tablet on display in the London Museum. The tablet, which easily fits into a person's hand, is covered with wedge-shaped, cuneiform writing. It originated in the Mesopotamian city of Nippur over 3000 years ago and is a schoolboy's lesson in mathematics. On one side of the tablet, the teacher has written out a multiplication table while on the other side the student has duplicated it from memory. Errors in the student's tables are denoted by the teacher's check marks. Although the student who labored over this tablet and the teacher who dutifully corrected it are long since gone, a modern viewer of the tablet easily identifies with them and their tasks. Across cultural thresholds and over millennia of time, the humanity of that small drama touches all of us.

A similar awareness and sense of identification with people from other present-day cultures can be nurtured in students. A teacher might have a class consider mathematics problems studied in another culture at a comparative scholastic level. For example:

> A farmer has 552 coconuts. He wants to put them into baskets. Each basket holds 23 coconuts. How many baskets are needed for all the coconuts? (East Africa)
>
> Chi Fu-ching farmed 15 mou of paddy for the landlord and was required to produce 620 catties of paddy per mou a year. What was the total quantity of paddy Chi Fu-ching produced a year? (China)

If a student in the class has a pen-pal in another country, perhaps an exchange of mathematics lessons can be initiated. Experiences of this

kind encourage students to realize how similar their mathematical learning experiences are with those of children and young people in other countries. They are also helped to discover that through mathematics, they share common bonds with peoples around the world.

Many materials, both formal and informal, can be found that lend themselves to promoting the concept of mathematical similarities between diverse peoples and cultures. Postage stamps, for example, often illustrate what a society believes is important and sometimes contain mathematically relevant messages about measurement, computation, mathematical instruments, graphing and mathematics in nature (Schaff, 1974). Colorful stamps lend themselves to developing attractive classroom displays which can serve as an easy focus for directed student discussions and reports.

In a similar manner, textile patterns and the geometric designs of folk art reveal common appreciations for geometric design and the principles of geometric symmetry (Zaslavsky, 1973). Batik cloth from Indonesia, Swedish jewelery, Pennsylvania Dutch quilts, hammered brass trays from Turkey and wall hangings from Lesotho all display patterns that can be recognized as forms of mathematical expression. Recently, Islamic art has drawn attention in the Western world for its rhythmic patterns--patterns that can be analyzed by the methods of transformation geometry using translations, rotations and reflections (Critchlow, 1976). Class lessons built around the use of such items not only concern mathematics but foster an integrated approach to learning by incorporating knowledge of geography and anthropology as well as developing a cultural and asthetic awareness in students.

Mathematics as a unifying and evolving human experience cannot be viewed solely in the static sense of "now." It should also be presented in a historical setting. Lessons are enlivened and broadened by the interjection of historical perspectives and anecdotes that show the interdependence of people in developing and using mathematical ideas. It can be pointed out to students that we study a geometry that originated in Egypt and was refined in Greece and a number system purported to come from India. The fact that "algebra" is an Arabic work meaning "transposing" attests to the Islamic influence on the subject. Our modern system of geometry based on the use of coordinates was given to us by a Frenchman, Rene Descartes. The fundamentals of calculus were developed by an Englishman, Sir Issac Newton and a German, Baron Gottfried von Leibniz; and the science of electronic calculations was perfected in the United States. The list of contributions from different countries can go on and on. It might include the games and devices, often used in mathematics lessons, whose origins lie in other cultures: the mancala from Africa, magic squares and tangrams from China, and Soma cubes from Denmark. The cultural legacy of these systems and devices should be made known to their users.

Problem Solving with a Global Emphasis

While mathematics may serve as a vehicle for establishing an identification with other cultures, it can also promote real understanding as to the state and nature of human interdependence. Mathematics can give us very real messages about ourselves and our world: messages that are often crying to be heard but are frequently ignored. Their content concerns the

population explosion, the depletion of natural resources, pollution of the environment, and world hunger. These messages can be told mathematically in many ways and at different levels of sophistication. Let us consider some teaching situations and strategies that lend themselves to promoting global perspectives.

During a class discussion on pollution, the teacher asks the students to estimate the number of canned beverages they and their family consume in a year's time. A total for the class is decided upon. A question is then posed, "If all the flip-tops from those cans were piled in one place, how large would the pile be?" Estimates can be taken. Students then set about collecting flip-tops and establishing a pile on the school grounds. When the pile is completed, estimates can be compared for accuracy and the actual weight of the pile computed. Flip-top proliferation can then be extrapolated to the population of the town or city in which the school resides and finally to the whole United States. In such a manner, an estimate can be obtained of the amount of aluminum discarded via flip-tops in the country for one year. (48×10^9 aluminum cans a year are used in the U.S.). Figures can be obtained on the annual aluminum consumption of various countries of the world. It will be found that Americans throw away more aluminum in flip-tops than the total amount of aluminum many countries use in a year! This incident was not chosen as being particularly dramatic but if the mathematical investigation is carried far enough, impressive results are obtained.

Sometimes the close examination of a simple mathematical fact and its implications can radically alter student perceptions. For example, 43% of the

cost of canned soda is for the can (Swatek, 1971). This means that 43% of all the money spent for soda eventually goes in the trash can. How much money would each student's family waste in this manner in a year's time? An ensuing discussion on this fact might consider the need for appealing packaging. Although the wastage in canned soda is extreme, it is estimated that approximately 20% of all food costs is for packaging. It would seem that a lesson in consumer math is taking place but the scope of the lesson can easily be broadened to consider what such elaborate packaging costs say about the society in question. Is food packaging as elaborate in a less affluent country? How is food packaged in other countries? What geometric shapes are used in packaging food? Can these shapes be made more efficient? To answer the last question, students could collect and analyze various food containers. One of the most efficient and inexpensive food packages used, especially in developing countries, is a cone made of old newspaper--the newspaper usually being imported from the United States.

Interesting problem situations with global implications can be developed around available data concerning population, food production, waste disposal, economic output, etc. These data abound in popular newspapers and magazines and can be found in such references as the Statistical Abstract of the United States and the United Nation's Statistical Yearbook of Economic and Social Affairs. Consider the following sequence of activities that might emanate from the data given in Table 1.

Table 1

World Populations by Regions 1976

Region	Human Population	Livestock Population	Area (km^2)
Africa	412,000,000	343,800,000	30,319,000
North America	239,000,000	308,600,000	21,515,000
South America	333,000,000	406,400,000	20,566,000
Asia	2,304,000,000	959,400,000	27,580,000
Europe	476,000,000	421,200,000	4,937,000
Oceania	21,700,000	253,800,000	8,510,000
U.S.S.R.	258,000,000	-	22,402,000

Students can be asked to compute the population density for each geographical region in number of persons per square kilometer. For comparison purposes, they may also be asked to estimate similar averages for their own neighborhoods, town or city and state. After these estimates have been obtained, comparisons can be made and a discussion stimulated. Questions for discussion focus might include the following: What does a high population density in a region mean? Do population densities have any relation to poverty, hunger, the spread of disease, illiteracy or the frequency of wars? Would people in a high density region live differently from people in a sparsely populated region in their relationships with their neighbors, the size of their houses, etc.? (For example, in Java there are approximately 385 people/km^2, while in Alaska, on the average, 4 people inhabit 1000 km^2). Because humans and livestock compete for the same territory, the number of domesticated livestock can be averaged into the estimates. When considering human and domesticated animals occupying the same space, how does this change the population density average for these regions of the world? Does a high ratio of livestock to people mean that people are well-fed? How is the situation in Africa complicated by

the existence of large herds of wild animals? Many such questions can evolve out of the simple exercise and thus, meaningful insights into world problems can be developed.

Some of the exercises discussed above involve students taking surveys of their family, classmates and neighborhoods and using the data obtained for the purpose of comparison or interpolation on a national or international scale. Such activities make a math lesson more personal and help the student realize that he or she is part of the "whole" when discussing world situations. Data collection and interpretation can be incorporated into mathematics laboratory situations where students must perform several mathematically oriented activities to achieve a desired end. A laboratory exercise that involves a rather interesting mathematical function as well as some data collection involving measurement and computation is the determination of nutritional status for individuals. A unit of measure used for nutritional standing is called a pelidisi and is obtained by the formula:

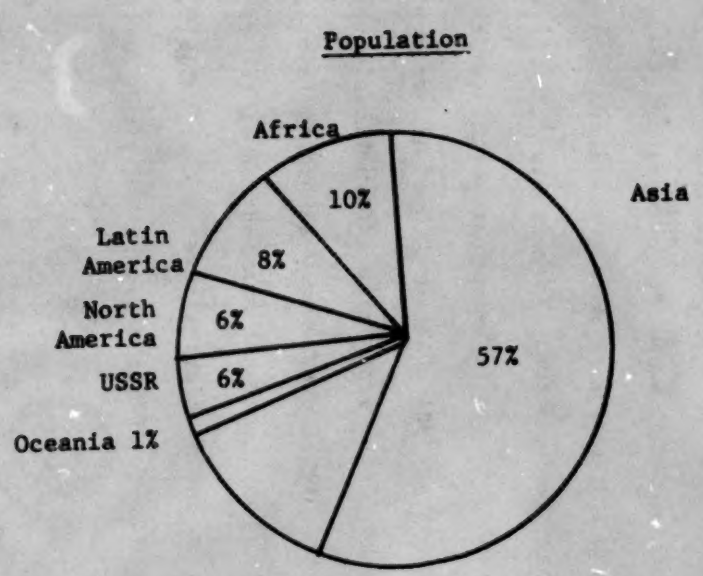
$$\text{pelidisi} = \frac{\sqrt[3]{10 \times \text{weight (gm)}}}{\text{sitting height (cm)}} \times 100\%$$

where sitting height is defined as the distance from the seat to the top of the head. The pelidisi of a well-nourished child is very close to 100%, while thin children may be between 88 and 94 percent. An adult with a pelidisi below 100% is considered undernourished, but a child with a pelidisi between 95 and 100 is well-nourished. At about 105%, an adult is overfed (Mathews, 1973). The pelidisi of individual students can be found, a class average obtained and several discussions initiated. Perhaps

data can be obtained from a less affluent neighborhood and comparisons made. Is there a correlation between poverty and nutritional status? Would this correlation hold in other cultures? Data might also be obtained for comparative student populations in another country or several countries, and hypotheses tested. What does a "cycle of poverty" mean, and how does it apply to countries of the Third World?

The preparation of graphs that allow for international comparisons frequently supplies striking visual evidence of the scope of global problems while also encouraging the sharpening of mathematical skills. In particular, pie graphs provide practice in working with ratios and percents. Students could be asked to convert demographic information into pie graphs to compare world populations. A similar pie graph can then be constructed based on the consumption or production of a commodity, and comparisons made between the two. Let us consider some implications and questions that arise out of making such comparisons, using graphs of population and energy consumption. (See Figure 1.)

From these graphs, it can be seen that North America contains 6% of the world's population and yet consumes 26% of its energy resources. Is this fair? What does "fair" mean in an international context? If all the energy resources were distributed evenly according to population, what would North America's share be? An examination of the recent history of energy consumption in North America reveals that in 1970, the region used 198 units of energy but by 1976 the figure had risen to 497 units, an increase



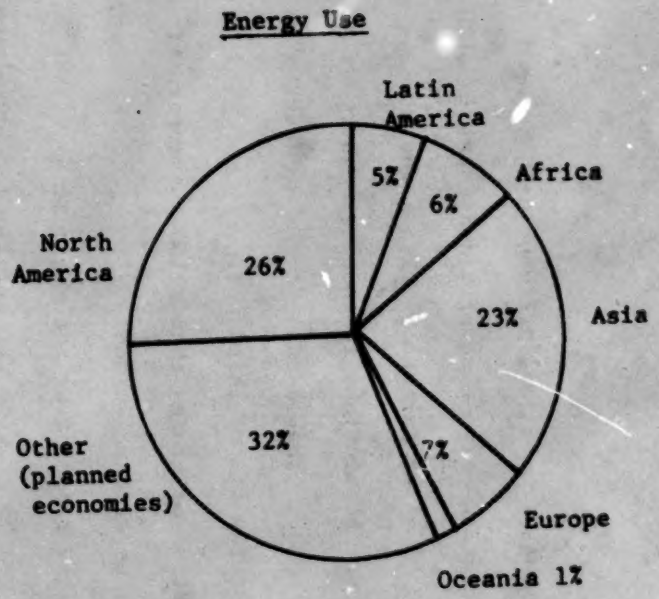


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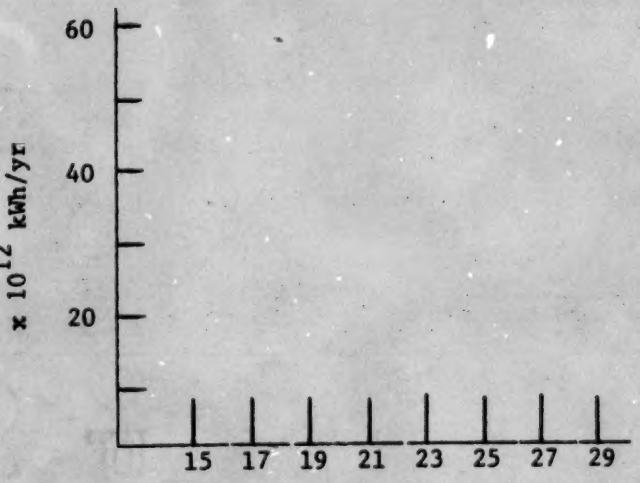
Figure 1: World Comparisons

of 150% in just six years! How will this situation probably change in the future? What can we do about it (Post, 1975)?

A corresponding graphic exercise that will provoke much thinking among high school students is the following:

> The table of data below was computed by scientists to show how energy has been used in the past and how it will be used in the future. Plot this data on the set of axis provided. Discuss the shape of the resulting curve. (Wilson & Jones, 1974.)



Year	Energy in kWh/yr
1500	2×10^{12}
1750	6
1900	16
2050	48
2160	50
2250	48
2450	16
2650	6
2850	2

An issue closely related to energy utilization is the proliferation of automobiles in the world. In 1967, there were 160,650,000 passenger vehicles in the world. By 1976, this figure had risen to 271,590,000. What was the rate of increase of automobiles over this period? How does this rate increase affect energy consumption? How does this increase affect the environment? For example:

> The number of automobiles in use in the U.S. in the year 2000 is predicted to be 7 times as many as in 1947. The number in

1970 is 2.6 times as many as in 1947. If the automobiles in Los Angeles County are responsible each day in 1970 for putting 30 tons of deadly sulfur dioxide into the air and the predicted growth of the U.S. automobile population is accurate, how many pounds per day of sulfur dioxide will be put into the air in Los Angeles County in the year 2000? (Henderson & Van Beck, 1971.)

In 1967 a total of 142 million tons of pollutants from America went into the earth's atmosphere: 86 million tons from cars; 43 million tons from factories; and 13 million tons from heating and refuse burning. What percent of this pollution was caused by cars?

How much CO_2 is added to the earth's atmosphere each year that is not used up in nature's normal cycle? Refer to Figure 2.

While the simple processes of mathematics can provide means of recognizing global problems, mathematics at a more advanced level can also help students comprehend the insidious dynamics of growth processes involving resources and population. A calculus class, for example, might be asked to estimate the amount of United States petroleum reserves (Weyland and Ballew, 1976).

The Mathematical Modeling of Global Problems

The concepts and procedures of secondary school algebra can readily be used to develop simple mathematical modeling exercises upon which future predictions can be made. Consider the following introduction to exponential functions.

There is a legend in Arabia that the inventor of the game of chess was to be rewarded by his king who would give him anything he wanted. The inventor indicated that he was a humble man with simple needs and that the

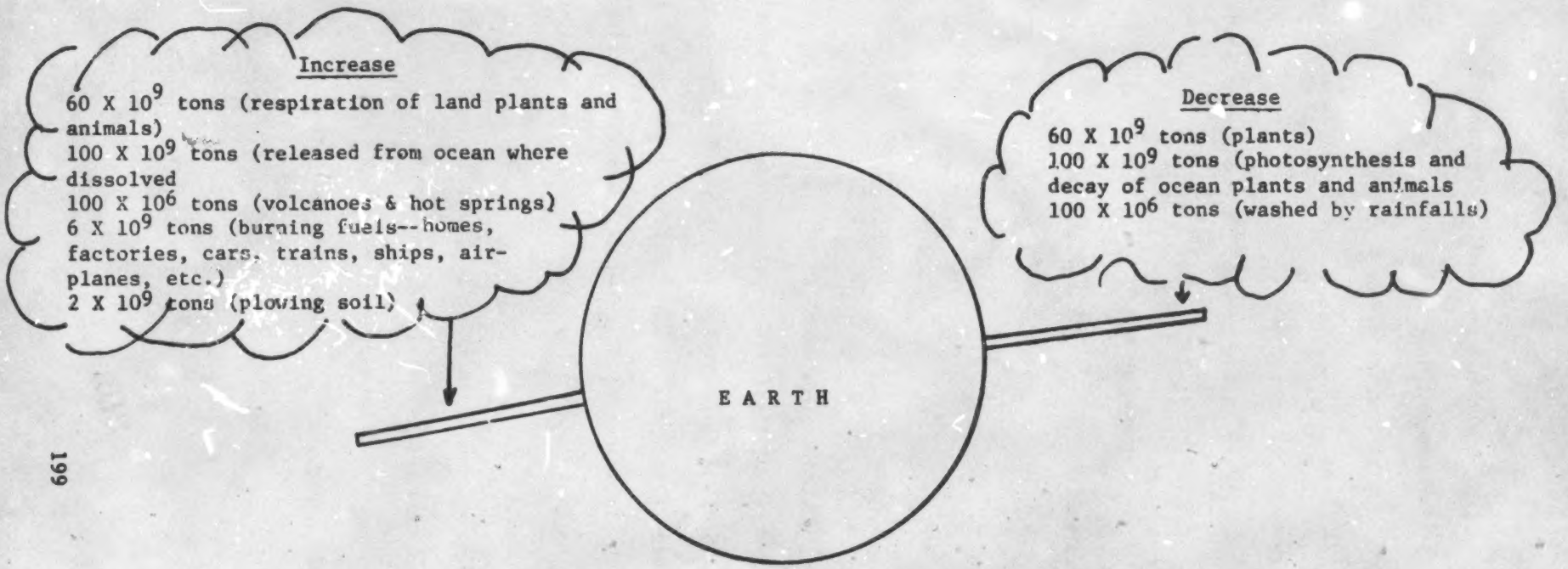

Increase
60 X 10^9 tons (respiration of land plants and animals)
100 X 10^9 tons (released from ocean where dissolved
100 X 10^6 tons (volcanoes & hot springs)
6 X 10^9 tons (burning fuels--homes, factories, cars, trains, ships, airplanes, etc.)
2 X 10^9 tons (plowing soil)
Decrease
60 X 10^9 tons (plants)
100 X 10^9 tons (photosynthesis and decay of ocean plants and animals
100 X 10^6 tons (washed by rainfalls)
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Figure 2: Earth's Annual CO_2 Exchange Cycle

king could reward him by paying him a sum in wheat. The amount of wheat would be determined by placing one grain on the first square of a chess board, two on the second, four on the third and so on, doubling the amount on each consecutive square until all 64 squares were used. How much wheat was to be given to the inventor of chess?

A table such as the following should be used in organizing student findings.

Payment in Wheat

square n	no. of grains on square	total grains, W	2^n
1	1	1	2
2	2	3	4
3	4	7	8
4	8	15	16
.	.	.	.
.	.	.	.
.	.	.	.
64	.	$2^n - 1$	2^{64}

Using a hand calculator, a student can complete this table and be asked to find a function $W = f(n)$ that will give the total amount of grain accumulated by the inventor. By inspecting the patterns in the W and 2^n columns of the table, it can be concluded that $W = 2^n - 1$. Further, it can be estimated that 2^{64} of wheat is 500 times the world's present annual production or enough to cover the earth to a depth of several inches. Indeed, the inventor's request was modest!

This exercise indicates the dynamics of a geometric progression. By constantly doubling the amount of a substance, the amount increases rapidly with respect to time. Many other nonmathematical examples can be found that dramatically demonstrate the power of geometric progressions and capture the

imagination of students. For example, traditional Japanese swords are made by a process devised by the craftsman Masammune in the thirteenth century (Bronowski, 1973). This process requires the folding-back upon itself of a billet of steel many times before the final sword is forged from it. If a typical samurai sword is produced from a billet that has been folded 15 times, how many layers of steel are in the sword? The answer is found to be 2^{15} or 32,768 layers!

For the exercise involving wheat, the students can graph $W = f(n)$ for the values of n considered. The resulting exponential curve approximates the growth rates of many phenomena including population growth and resource consumption and therefore can be useful in predicting the future magnitude of these problems (Bartlett, 1976). A mathematical analysis of growth rates can be simplified and further refined by use of the compound interest formula:

$$A_n = p\left(1 + \frac{r}{100}\right)^n,$$

where A_n is the amount of money after n years; p, the principal invested and r, the rate of interest. For example, if an annual inflation rate remains 8%, a bike costing \$120 in 1979 will be found to cost approximately \$240 in 1988; i.e.,

$$\$239.88 = 120(1 + .08)^9$$

The price approximately doubled in 9 years. With the use of a hand calculator the doubling time, t, for various inflation rates can be calculated and tabulated. An inspection of the resulting table will reveal that doubling time is very closely related to r by the formula $t = \frac{72}{r}$

(Brown, 1966). The "rule of 72" allows an easy access for investigating exponential growth processes concerning inflation:

Fill in the table assuming a constant 8% annual inflation rate over the periods of time indicated.

Item	Cost 1979	1988	2024	2060
movie	$ 3			
pizza	5			
compact car	5,000			
average house	40,000			

The population growth in one's life span may also be calculated from the same formula:

Assuming a constant 2% annual increase in population growth for the periods indicated, record the populations for the different time periods.

Year	Population
1979	4.1×10^9
1988	
2024	
2060	

With such data at hand, the implications of this growth can be discussed.

The "rule of 72" can also be used in estimating the depletion time, t_d, for amounts of various fixed resources such as coal or iron. If

R is the total amount of resource in reserve;

n, the number of doubling periods the resource will last;

r, the constant increase in annual rate of consumption;

$t = 72/r$, the length of a doubling period in years;

q, the amount of resource used last year; and

p, the total amount of resource used in the first doubling period

then it can be shown that:

$p = \frac{3}{2}(q)(t)$, $2^n = \frac{R}{p} + 1$, therefore

$$n = \frac{\ln\left[\frac{R}{p} + 1\right]}{\ln 2} \text{ and } t_d = (n)(t) \text{ (Hamel \& Woodward, 1979)}$$

Once these formulas are introduced, students can make studies of the depletion times of various resources and by comparing the results obtained for various rates of increased usage come to an understanding of the basic principles of conservation; i.e., if you use less, you will have more longer. For example, consider such a study based on the United States' coal reserves.

> In 1978, the estimated coal reserves of the U.S. were placed at 2.42×10^{11} tons while the consumption for the previous year, 1977, was 6.04×10^{8} tons. Estimate the number of years our coal reserves will last if the rates annual increases are: 0%, 2%, 4%, 6%, 8%, and 12%. (See Table 2.)

It has been estimated that the world's reserves of 6.66×10^{11} tons of coal, if used at the rate of annual increase of 1973 would last only 215 years! (U.N. Economic Commission for Europe, 1978.) What do these facts say about the world's reliance on coal as a long-term energy source? What alternatives are there?

Coal Reserves 1978 R	Consumption 1977 q	Increased Annual Rate of Consumption r	Doubling Time $t = \frac{72}{r}$	$p = \frac{3}{2}(q)\,t$	$\frac{R}{p} + 1$	n	t_d (years)
2.42×10^{11}	6.04×10^{8}	0	--				401
		2	36	3.26×10^{10}	8.42	3.07	111
		4	18	1.63×10^{10}	15.85	3.99	72
		6	12	1.09×10^{10}	23.2	4.54	54
		8	9	$.815 \times 10^{10}$	30.45	4.93	44
		12	6	$.544 \times 10^{10}$	45.5	5.51	30

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Table 2: Depletion Time for Coal Reserves

Conclusions

Any aspect of mathematics can be utilized in developing a global awareness in students. The few examples examined here demonstrate the use of computation; work with fractions, percentages and scientific notation; graphing; algebraic manipulation and use of functions. In working on such exercises, students develop skills in collecting and mathematically interpreting data. Where necessary, however, judgments must be modified by practical considerations. For example, in computing the ratio of people to land in Table 1, it should be noted that much of the land in Africa is desert and cannot support a human population; so the ratio obtained, if used to project living space, must be viewed with caution. Higher forms of mathematical understanding involving analysis, synthesis and evaluation are brought into play when students test hypotheses, draw conclusions and communicate those conclusions to others.

Discussions centering around problem situations and student findings are extrememly important. Teachers, themselves, must develop some depth in international understanding so that they can adequately stimulate and guide such discussions. Simplistic answers should be avoided. Students must be made to realize that "nice" answers are not always possible. Problems involving the population explosion should reveal the alternatives to controlling population growth: war, famine, disease and mandatory birth control. The 1798 prophecies of Thomas Malthus can be examined and reasons projected as to why they were not fulfilled. Students will find that many factors influence a problem's outcome and that the solution of

one problem may lead to the realization of another; e.g., the substitution of coal for oil will soon deplete our coal reserves. These are the realities of real-world problem solving.

The collection and use of data in making cross-cultural comparisons should not result in a "them" and "us" mentality but rather should focus on "we." Situational discussions must emphasize the mutual responsibility of nations and peoples in enduring and solving the universal problems that confront us. The use of global perspectives in mathematics teaching while assisting in the development of cognitive skills also supplies a basis for affective growth. By using mathematics to explore issues of fundamental importance to mankind, it is hoped that students will develop attitudes that transcend parochial biases and reflect their understanding of the interdependence of institutions, nations and peoples. Thus, mathematics and its teaching is truly a vehicle for nurturing global awareness.

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Chapter 12

GLOBAL EDUCATION: ENVIRONMENTAL CONCERNS

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This paper addresses the concept of environmental stewardship from a global perspective and the role of this concept in the educational process. The very basis of all life is in issue, as well as how to teach about the quality of life and about ways to assure its continuation. Since the knowledge on these topics is overwhelming, this text is limited to particular concerns and suggests a basic strategy for teaching children, K-12, about the planetary environment through a global education approach.

The Global Environment

The global environment can be approached from at least two perspectives. In the first, the planet Earth is seen as a miniscule body in a vast solar system, which itself is part of an almost incomprehensible, gigantic universe. This, in turn, interacts and interconnects with the forces of other universes. From this view, we soon realize the limited role of Earth in the universal order of existence.

The second approach, especially relevant to our daily life, views the Earth as a planet that provides the ecosystems to support all life on it. Through a series of complex interactions, the Earth has evolved as a home environment for an abundance of plant, animal, methanogenic, bacterial, and possibly still other undiscovered life forms. The global environment has provided each form with a suitable habitat for existence and continuity. An interdependence between its living and nonliving

components dates from the earliest development of the planet.

Earth history is fascinating in and of itself; and it is of great practical value to global education. The origins of this planet are (relatively) recent in the procession of "cosmic history" time. About 5 billion years ago, out of the black void and vastness of our universe, a series of events occurred that initiated the creation of Earth. Since humankind is an incurably curious animal, it has always sought, at one level of intelligence or another, to understand and explain the mysteries of the origins of the Earth. A number of theories have been advanced to account for the Earth's formation (Moore, 1933). One explanation postulates the "Big Bang" of the universe, an event in which our planetary spheroid was projected from some unknown larger mass after an explosion of unimaginable intensity. Another suggests that Earth, like the other planets of our solar system, may have formed by collecting space matter over billions of years, with a weight/density combination keeping it in universal equilibrium as it revolves around the sun. Other theories abound, but we have yet to verify our factual origins.

Embryonic Earth continued to form in a series of cataclysmic events in which it is believed heat of its molten core escaped outward. Resulting decreases of the core temperature caused the formation of crust, which should have been uniform over the face of the planet. However, with the concurrent formation of the atmosphere and hydrosphere, the crust was exposed to tidal stress, uneven cooling, and irregular contraction, eventually shrinking in various degrees to fit the reduced interior masses.

These events occurred in a forbidding environment: hot rains, poisonous gases, earthquakes, volcanoes, and other severe conditions. From such violent beginnings came the relatively settled global environment of humankind's 6-million-year history: oceans, plains, mountains, continents, and the vast assemblage of life forms that interact in the waters, on the land, and in the air.

Impact of Humankind

A crucial strength in the composition of the global environment is the interaction and interdependence of all living and nonliving components. As an ecosystem, the Earth is supported by many life-supporting factors. And as with all ecosystems (Bailey, 1975) the Earth has a finite amount of living and nonliving resources, which are confined to the parameters of our planet (with the exception of space exploration materials and personnel). Because of local or global environmental changes, varying from overabundance of predators to changes in climatic temperature, many species that have evolved in the history of the ecosystem have either become extinct or are in the process of evolution.

About 6 million years ago, with the appearance of humankind (Homo sapiens), the foundations were laid for events that would alter the environment and the course of global events. As recently as 100,000 years ago, it is believed that the frontal lobes of the human brain began to develop rapidly, giving humankind its first experience with intelligence and the decision-making process. Basic communication occurred, primitive

agricultural skills were developed, and our species progressed into areas yet undiscovered by other life forms. Since the Neolithic period (40,000 years ago) many dramatic changes have occurred above, on, and below the planet's surface: man-made complexes, agricultural systems, mass transportation routes, and economic orders. However, much of our progress has been gained at the expense of the global environment. What we have done in the past, and are doing presently, has degraded and diminished the quality of planetary life. Some selected highlights will be introduced here because of their relevance to global education.

Population and Food

Most people cannot begin to understand the intricacies of exponential population growth, whose ramifications can be detrimental not only to a species but to the survival of an ecosystem. When the first cities on Earth were founded 5,000 years ago, the total human populace of the planet was estimated to be 20 million, and it took several million years to reach that number. During the next 3,000 years, to the beginning of Christianity, the populace increased to 200 million. From then, until the late 1860s Earth population accelerated to 1 billion people. By 1936, the planet had 2 billion people; by the mid 1960s, 3 billion; and in 1975, the biological species of humankind passed the 4 billion mark. By the year 2000 it is expected that humankind will reach a population of 6.5 to 7 billion people, all wanting access to the same staples and material resources (Revelle, 1973).

Putting aside life styles and material wealth, let us focus on the basic staple of survival, food. While Americans overindulge in more than four times the needed food intake each day, nearly 800 million persons (18% of the world population) are starving. This does not include people dying of malnutrition, a figure that is expected to reach 200,000 persons per day by the year 2000 if solutions to the problem cannot be found (Anderson, 1971). Even America, with its rich resources, is at risk. In the past 5 years world demand for protein has increased at a rate of 3% per year, and our agricultural structure cannot keep up with the demand. Our grain reserves are at their lowest point since World War II, with less than 6 weeks of storage contents; with increased costs in fertilizers and energy, reserves will fall even lower in the next 5 to 10 years.

In addition, expanding population and changing technologies in agriculture across the globe are threatening the genetic reservoirs of the planet's major food crops. In the last 8,000 years of agriculture, plants that have served as major food resources have crossed a threshold. The majority survive because we prepare the soil, guarantee decreased competition with other plants, sow seed in the proper season, protect crops during the growing period, and collect the seed. These plants are our captives through domestication. Since we cannot possibly get our food needs from wild plant sources, 4 billion people have become dependent upon the high yield of cultivated crops. These plants come from 12 environmental areas around the globe, and are relatively confined to their respective

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Each of the world's basic food plants originated in a relatively confined geographic region. The regions overlap for a number of crops, but nine major and three minor centers in the Old and New World have been identified as being the areas which account for the origin and diversity of the vast majority of cultivated plants in our world. Known as Vavilov centers, after a Russian plant breeder and geneticist, these valuable reservoirs of crop plant germplasm are now disappearing.

OLD WORLD CENTERS

1 ETHIOPIA
Banana (endemic)
Barley
Castor bean
Coffee
Flax
Khat
Okra
Onion
Sesame
Sorghum
Wheat

2 MEDITERRANEAN
Asparagus
Beets
Cabbage
Carob
Chicory
Hops
Lettuce
Oats
Olive
Parsnip
Rhubarb
Wheat

3 ASIA MINOR
Alfalfa
Almond (wild)
Apricot (secondary)
Barley
Beets (secondary)
Cabbage
Cherry
Date palm
Carrots
Fig
Flax
Grapes
Lentils
Oats
Onions (secondary)
Opium poppy
Pea
Pear
Pistachio
Pomegranate
Rye
Wheat

4 CENTRAL ASIATIC
(Afghanistan—Turkestan)
Almond
Apple (wild)
Apricot
Broad bean
Cantaloupe
Carrots
Chick pea
Cotton (*G. herbaceum*)
Flax
Grapes (*V. vinifera*)
Hemp
Lentils
Mustard
Onion
Pea
Pear (wild)
Sesame
Spinach
Turnips
Wheat

5 INDO-BURMA
Amaranths
Betel nut
Betel pepper
Chick pea
Cotton (*G. arboreum*)
Cowpea
Cucumber
Eggplant
Hemp
Jute
Lemon
Mango
Millets
Orange
Pepper (black)
Rice
Sugar cane (wild)
Taro
Yam

6 SIAM, MALAYA, JAVA
Banana
Betel palm
Breadfruit
Coconut
Ginger
Grapefruit
Sugar cane (wild)
Tung
Yam

7 CHINA
Adzuki bean
Apricot
Buckwheat
Chinese cabbage
Cowpea (secondary)
Kaoliang (sorghum)
Millets
Oats (secondary)
Orange (secondary)
Paper mulberry
Peach
Radish
Rhubarb
Soybean
Sugar cane (endemic)
Tea

NEW WORLD CENTERS

8 MEXICO-GUATEMALA
Amaranths
Bean (*P. vulgaris*)
Bean (*P. multiflorus*)
Bean (*P. lunatus*)
Bean (*P. acutifolius*)
Corn
Cacao
Cashew
Cotton (*G. hirsutum*)
Guava
Papaya
Pepper (red)
Sapodilla
Sisal
Squash
Sweet potato
Tobacco (*N. rustica*)
Tomato

9 PERU-ECUADOR-BOLIVIA
Bean (*P. vulgaris*)
Bean (*P. lunatus*)
Cacao
Corn (secondary)
Cotton
Edible roots (oca, ulluco, arracacha, añu)
Guava
Papaya
Pepper (red)
Potato (many species)
Quinine
Quinoa
Squash (*C. maxima*)
Tobacco (*N. tabacum*)
Tomato

10 SOUTHERN CHILE
Potato
Strawberry (Chilean)

11 BRAZIL-PARAGUAY
Brazil nut
Cacao (secondary)
Cashew
Cassava
Maté
Para rubber
Peanut
Pineapple

12 UNITED STATES
Sunflower
Blueberry
Cranberry
Jerusalem artichoke

Figure 1. Origin of the world's basic food plants[1]

[1]From "The World's Crop Plant Germplasm: An Endangered Resource" by G. Wilkes, Bulletin of the Atomic Scientist, 1977, 33, 8-16.

areas (Figure 1). As the human population expands, wild plants (and animals) are destroyed and die out because of human activities. Unless we adopt a global perspective, a "genetic wipeout" of species (Wilkes, 1977) can occur that would limit future food production. If radical environmental changes were to develop, massive starvation could ensue and staple plant species might be forever lost. The urgency of providing food and channeling it to an ever-expanding worldwide population is clearly upon us, and a global perspective is a first imperative.

The Limitation of World Resources

Since the first Earth Day, claims have been made that the modern era of economic and population growth is about to be curbed by pollution and/or lack of worldwide resources. According to the Club of Rome study, continued population and economic growth will lead to exhaustion of available resources, mass starvation, and the raising of pollution to lethal levels. If this computer-based projection becomes a reality, it is a distinct possibility that billions of people in the world may die during our children's lifetime, if not during the latter part of ours. Following this catastrophe, Earth would stabilize with a residue human populace living at subsistence levels. A gloomy forecast indeed, but if one considers the price of energy fuels, the declining quality of water, air, and soil resources, and the price of food staples in 1979, can we realistically be optimistic about global conditions in the year 2000 (Schlesinger, 1979). Humankind's living requirements place a burden not only on the individual but on the entire global pool of resources

available to the species. For example, since 1960 world demands for mineral resources have increased at a rate of 5% per year (Schwartz, 1977). Since 1940 our nation has consumed more mineral products than all of humanity in previous history. The United States consumes 30% of all world mineral production. Can such gluttony continue?

Another concern of global proportion is heavy deforestation of the environment and the resulting process of desertification creating deserts and arid land at the rate of 50,000 square kilometers a year globally. The primeval forest of 10,000 years past covered half the earth's land surface (Congressional Research Service, 1975). As population grew and the need for basic staples increased, humankind routinely destroyed trees and cleared whole forests for agricultural use, fuel consumption, and dwelling construction. With time and continued population expansion, vast expanses of land continue to be lost to human use. On a worldwide basis, roughly 60% of forested land destroyed annually is placed into agricultural production, 30% goes to fuel consumption, and 10% to industrial use, such as homes, commercial timbering, etc. Between 1963 and 1973, 1.2 billion acres of land were deforested, a staggering 15% of the land resource. Today, only 30% of the earth's surface remains forested (Council on Environmental Quality, 1978).

A classic example of deforestation is the Panama Canal. In the past 25 years, 35% of the surrounding tropical forests have been burned for farms and pastures. Two years ago, because of this activity and resulting floods, droughts, and massive soil erosion, the water of Lake

Gatun, which supplies the canal, dropped so much that major shippers had to send their cargo 10,000 miles around Cape Horn. A recent State Department report commented that "by the time the United States transfers the canal to Panama, the canal may have become a worthless ditch, a colossal monument to resource mismanagement" (Deforestation, 1979).

Where will it lead us as a species? The ramifications extend from an understanding of national/continental political priorities, to the failure to protect young trees from foraging animals, to erosion and declining soil fertility. The answer to these concerns is found in a global perspective, but the time to achieve the solutions may be running out.

Worldwide Energy concern

The concern with energy has been with us through history. Consider this contrast: the citizens of the United States use 450 times the amount of energy used by the citizens of Mali. But the average householder of Mali spends nearly 25% of his/her annual income ($21.00 of $80.00) for fuel needs, while the average United States family spends only 6% of its income on fuel needs.

Indeed, all nations have an energy problem, whether it be direct consumption or production. As the world's populace grows, so do energy needs. Currently, the amount of energy fuels available do not meet the demand of the individual, our societies, or our technologies. In 1972 the United States imported oil costing $317 million. On several occasions, OPEC nations have raised the per-barrel price of export oil; at this writing the price is nearly $15 a barrel, and our national oil bill

grew to $53 billion in 1978. By 1985, our nation will be paying $90 billion for oil (National Science Teachers Association, 1978). Whether we look at our oil-based energy economy or Mali's wood-based energy economy, the problems remain the same. There is simply not enough of the resource to go around.

It is clear that we as a species must learn to conserve what energy is available and, concurrently, explore other potential sources, such as solar, wind, tidal, and recycling forms of energy.

Both the natural death of deforestation and the man-made death of nuclear irresponsibility threaten. As an oil company ad states, "There are many questions -- but no simple answers." True, yet again, we must begin -- if changes are to occur, and occur in time.

Other Concerns

Other worldwide subjects of growing concern include the economic and ecological controversies related to wildlife, especially on the African continent; and the long-term problems of water resource development, such as effects of continual irrigation -- waterlogging, salinity, and dangers to human health. Technological transfer to Third World countries and other developing nations has also become an issue. The excessively hopeful concept that rich nations should help poorer nations industrialize (Myrdal, 1974) may not be the best course of action, since many tropical/subtropical nations lack the personnel, natural raw materials, and temperate climates to accommodate technological "advances."

At a global level topics such as urbanization, oil pollution, overfishing of oceans, transboundary air pollution, and planetary management of natural resources (Allen, 1978) are all parts of the larger questions of humankind's destiny, planetary stewardship, and coexistence with other life forms. Only through a global perspective of the environment can we understand the long-range ramifications, and only through education can we begin to change a course that has already been set in motion.

Global Education

To remedy these pressing global concerns, humankind must think and rethink the issues surrounding the life-support systems that Mother Earth provides. Education in each culture must lead the way -- or we risk destruction of the environment as well as our own species. An initial educational tool to foster awareness, discussion, involvement, and resolution lies in the curriculum process (King, 1977), for there the seeds of knowledge will be planted in the future generation of global educators, planners, and Earth citizenry. Moreover, strategies are necessary to encourage teachers to understand the implications and perils in this dawn of the global age. We must ask ourselves, as educators and as Earthlings, how to help our youth to understand, support, and be sensitive to the events and changes that will benefit Mother Earth, her resources, and our own survival.

We must explain the common goals of our species -- goals that predate cultural influences such as politics and communications. We must understand

the dimensions of these common goals -- the sharing of the global environment by all people and all life forms of the Earth (Bailey, 1975), the right to live and interact, and the desire and right to occupy space on the surface of our planet (Long, 1978). Existence is the common factor among all life forms on Earth, not only to humans (Harvey, 1976). Ideally, global education about the planetary environment should promote an understanding of the world through patience, shared survival, and a spiritual as well as material quality of life. Other activity, investigation, and understanding are subsets of this global concept of life.

A Suggested Curriculum Strategy

The wealth of instructional materials about the environment allots little time or application to such a view of global perspectives. The following outline offers a rudimentary strategy for K-12 supplementary curriculum and/or study units in global education. Local interpretation of such strategy should be based on (a) the goals of the local educational institution and (b) the cultural and environmental awareness level of the students.

Kindergarten - YOUR SENSES AND THE WORLD AROUND YOU

- Focus student investigation and activities on sensory awareness of the environment.
- Center observations and definitions on understanding similiarities and differences among classmates, family members, and the community-at-large.

First Grade - LIVING AND NONLIVING FORMS

- Focus activity on objects that are alive -- why they are alive, respective body shapes, and related purposes.
- Develop activities about nonliving objects -- why they have certain forms, shapes, and sizes; and their role in the local environment.

Second Grade - INTERACTIONS AND INTERRELATIONSHIPS BETWEEN LIVING AND NONLIVING FORMS

- Focus activities on life cycles in the environment -- plant/animal-soil/air/water interfacing, and the relationships and events of the natural and man-made worlds.
- Focus activities on location of ecosystems and habitats, and environmental influences upon individual characters in a natural and cultural surrounding.

Third Grade - SYSTEMS APPROACH OF A GLOBAL ENVIRONMENT

- Focus activities on individual systems such as the human body, a plant, and a nonliving form. What are the compositions of parts that make up the whole?
- Design activities that progress to a point where the students are involved with the

composition of parts that make up the planet Earth.

Fourth Grade - PLANET EARTH AND THE UNIVERSE

- Focus activities on simple astronomy lessons that promote an understanding of the location of Earth in our solar system and universe.
- Develop activities centering on basic physical and related cosmic forces that affect the Earth and the quality of life.

Fifth Grade - HUMANKIND: SIMILARITIES AND DIFFERENCES

- Focus activities on humankind -- our function as a part of nature, our relationship to other life forms, our cultures and our perspective for the future.
- Focus activities on the history and development of agriculture and technology, disruption of Earth's systems, and basic causes of pollution.

Sixth Grade - WINDOWS OF THE WORLD: STUDENT PERCEPTIONS

- Focus activities on value systems -- individual, group, societal, cultural, or planetary.
- Involve all students in simulation studies

centering on the global way of life from the viewpoint of various topic areas.

Seventh Grade – STEWARDSHIP OF THE SPACESHIP EARTH

- Focus activities on environmental issues at a local and/or state level and examine how they contrast with national and/or global issues.
- Develop activities centering on the types of alternatives that are available with regard to present trends about an environmental issue.

Eighth Grade – CITIZEN RESPONSIBILITIES CONCERNING THE ENVIRONMENT

- Focus investigations and activities on local, state, and national channels of government and the techniques they use to respond to environmental needs and/or issues.
- Investigate and compare our system of government to that of a foreign government. In addition, develop activities exploring the United Nations and other international efforts to respond to global environmental concerns.

Ninth Grade – UNDERSTANDING HUMAN CHOICES

- Focus activities on the problems confronting individuals, nations, continents, and

the human species as global concerns expand.

- Focus activities on students' abilities to understand the differences between preglobal and global perspectives.

Tenth Grade - OPINION AND PERSPECTIVE

- Focus activities on awareness of varying perspectives with regard to the individual and the world, followed by investigative research about the different perspectives.
- Focus activities on discovering and recognizing global perspectives that differ profoundly from our own. (This level of activity reinforces concepts learned in sixth grade).

Eleventh Grade - THE WORLD IN DYNAMIC CHANGE

- Focus on research and investigation activities revealing present key traits, mechanisms, or technologies that assist in the operation of global dynamics.
- Conduct activities on awareness of theories and related concepts regarding current global changes.

Twelfth Grade - STATE OF OUR PLANET

- Focus activities on the most recent world-wide environmental conditions -- migration, political change, war and peace, economic conditions, etc.
- Develop activities on awareness of students' roles and their responsibility to become involved in one or more of these world conditions and work towards its resolution.

In developing a global curriculum strategy, planners should emphasize five specific capacities, as cited by Anderson (1978). These are:

A. To perceive oneself and all individuals as members of a single species of life whose numbers share a common biological status, a common way of adopting to their natural environment, a common history, a common set of biological and psychological needs, common existential concerns and common social problems.

B. To perceive of oneself, the groups to which one belongs, and the human species as a whole as a part of the earth's ecosystem.

C. To perceive oneself and the groups to which one belongs as participants in the transnational social order.

D. To perceive of one's self, of one's community, of one's nation, and of one's civilization as both "cultural borrowers" and "cultural depositors" who both draw from and contribute to a "global bank of human culture" that has been and continues to be fed by contributions from all peoples [and all of the planet's resources], in all geographical regions, and in all periods of history.

E. To self-consciously perceive that the world system and its component elements are objects of perceptions, beliefs, attitudes, opinions, values and assumptions on our part as well as others. (pp. 41-42)

If we can train for and combine these capacities to achieve stewardship for planetary resources, wise decisions and judgments can be made to assure humankind a future role in time and place. The final lesson of global educational perspectives is that the world is interconnected in ways that decree a common fate. Humankind must realize that as a species we can be masters of our destiny and that we must work together in formulating and shaping that destiny. In doing so, we must include and be responsible for all other living and nonliving objects. The challenge is before us, and the time to proceed on a global course of environmental knowledge is now.

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CITIZEN EDUCATION AT RESEARCH FOR BETTER SCHOOLS

Research for Better Schools, Inc., (RBS) views citizen education as an educational effort that seeks to teach all citizens the knowledge, skills, and dispositions that will encourage and enable them to participate effectively in democratic society. The knowledge, skills, and dispositions referred to include:

- Knowledge of the dynamic political, legal and social institutions of our society as well as related issues and problems.
- Skills that enable individuals to make informed decisions, solve problems, act cooperatively, exercise leadership, set realistic goals, and reasonably evaluate various courses of action.
- Dispositions that stress respect for others and commitment to equality, rationality, action, and participation.

Citizen education involves many content or topic areas involving specific societal concerns. One of these is global education, for which RBS has developed the following working definition: "Global education examines and relates world cultures and societies. Of particular importance are the politics and economics of international relations, the citizen's role therein, and the social, economic, and political issues."

The Citizen Education Component of RBS works with the state educational agencies in Delaware, New Jersey, and Pennsylvania to develop ways to improve the citizen education programs in their schools. Planning groups for citizen education have been established in each state to guide

activities and to coordinate citizen education efforts with each state's plan for general school improvement. Members of the RBS Citizen Education staff are ex officio members of the state planning groups, have worked on conferences in each state, have conducted a citizen education needs survey in the tri-state region, and have assisted in statewide citizen education planning efforts. In addition, RBS staff have helped selected schools in New Jersey and Pennsylvania to develop improved citizen education programs.